

## Volume II

# TranPlan 21 Transportation System Analysis



Draft Plan  
Montana Department of Transportation  
December 21, 1994

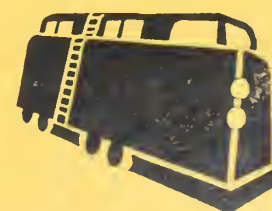
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# INTRODUCTION TO TRANPLAN 21 POLICY PAPERS



This volume presents the six transportation policy papers developed to date as part of the TranPlan 21 process. Each policy paper is intended to serve as a "stand alone" document.

The policy papers address the most pressing transportation planning issues identified by transportation users and providers at the start of the planning process. Each paper describes the key planning issues, provides background analysis, and a detailed description of the policy goals and actions adopted by the TranPlan 21 Steering Committee to address the issues. The potential actions which were not adopted by the Steering Committee are included at the end of each paper.

## A. Policy Paper Development

Transportation providers, users, other stakeholders, and the public were involved in the development of the policy papers and the selection of the policy goals and actions through the following steps:

- The issues addressed in the papers were identified through a detailed issue identification process involving transportation providers, users, and stakeholders throughout the state. (The results and approach are presented in TranPlan 21 Volume IV, Citizen and Stakeholder Issues and Priorities).
- Transportation providers participated in the development of policy options and the analysis of issues through the review of working drafts of the various papers and the provision of data.
- The draft policy options were made available for public comment through a series of open houses across the state, focus groups in Helena, and by mail. This enabled comment and priorities to be made by the public and different transportation interests before the policy choices were made.
- A public opinion survey involving over 700 Montanans provided information on their most pressing transportation concerns and guidance about the priorities which they believe MDT should attach to many of the actions outlined in the policy papers. (The results and approach are presented in TranPlan 21 Volume IV, Citizen and Stakeholder Issues and Priorities).
- The results of the public comment and the public opinion survey were considered by the TranPlan 21 Steering Committee in adopting and rejecting policy options.

## **B. TranPlan 21 Policy Papers**

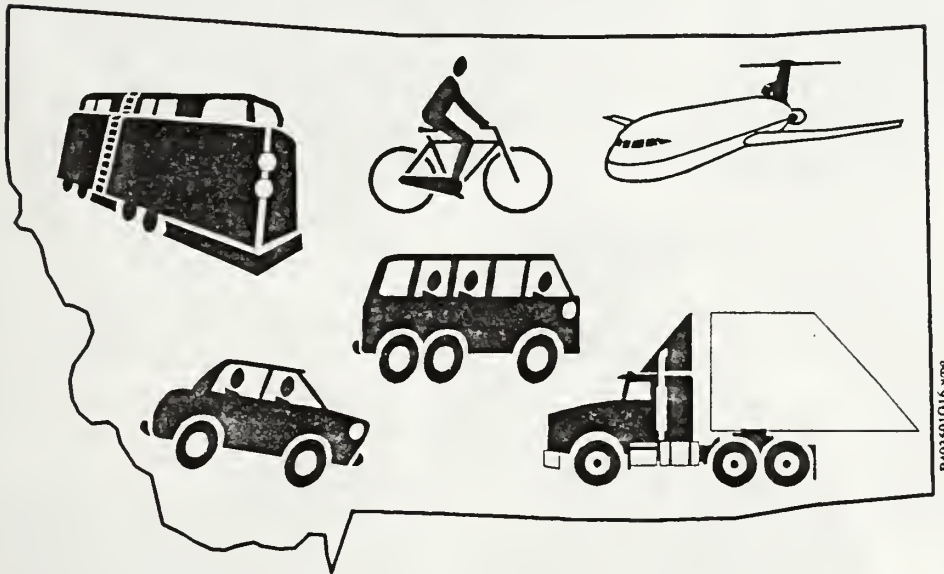
The following policy papers adopted by the TranPlan 21 Steering Committee are included in turn in this volume:

- Supporting economic development through the transportation system.
- Freight mobility.
- Roadway system performance.
- Access management and land use planning.
- Public transportation.
- Bicycle and pedestrian transportation.



# Montana Department of Transportation

## TranPlan 21



Supporting Economic Development  
through the Transportation System

Policy Paper

December 12, 1994

prepared by

DYE MANAGEMENT GROUP, INC.

in conjunction with

Teco Communications

## **I. TRANSPORTATION AND MONTANA'S ECONOMY-BACKGROUND**

### **A. Montana's Traditional Economic Base**

Montana's economy was built on a foundation provided by agriculture, mining and wood products and other manufacturing. While service-related businesses now are becoming increasingly important, these traditional basic industries will continue to be a staple for Montana's economic health.

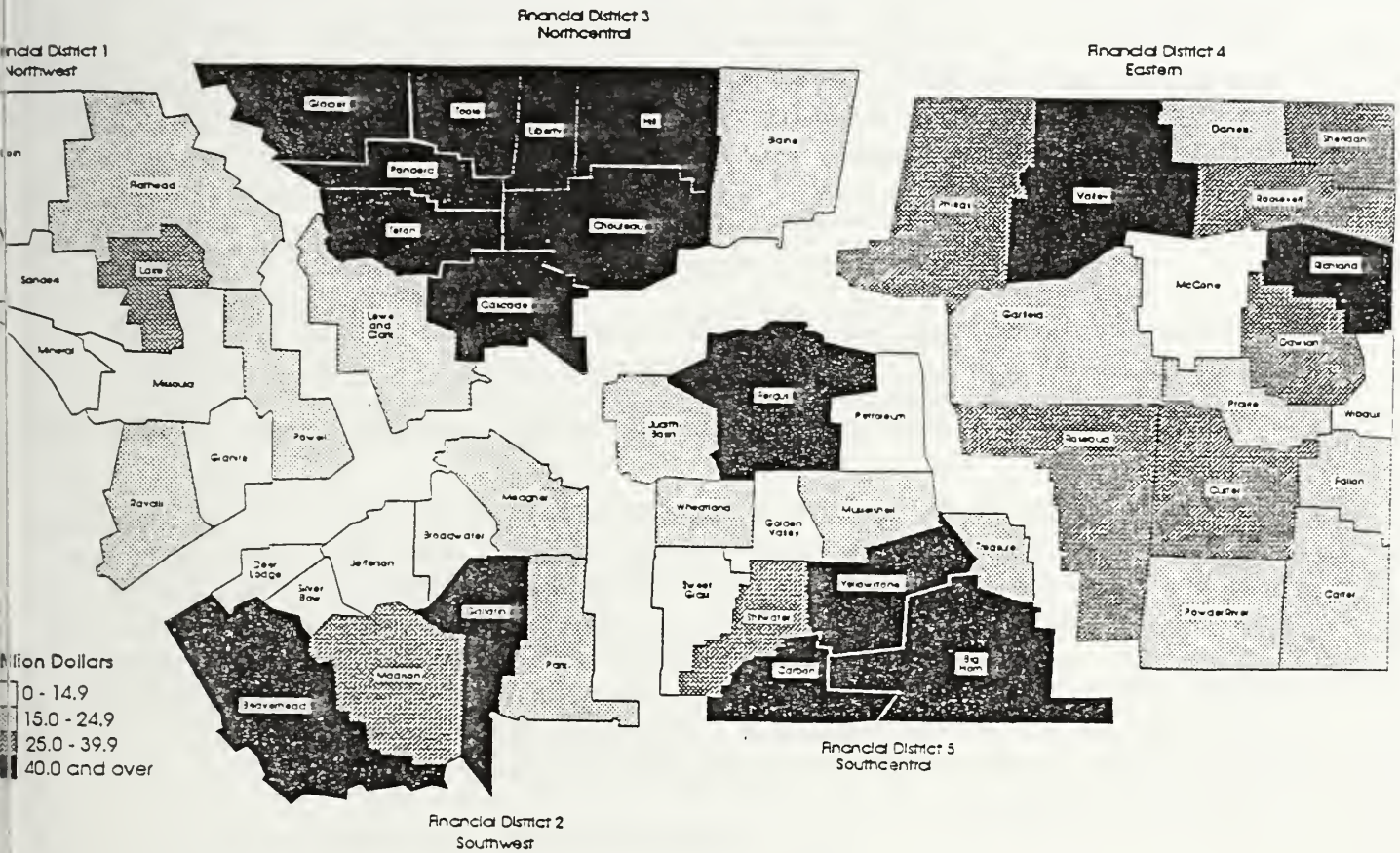
The following discusses the prospects for Montana's basic industries. Background information is broken out for each of the Montana Department of Transportation's (MDT's) financial districts.

#### **1. Agriculture**

Montana agriculture annually generates about \$2 billion in annual cash receipts. U.S. Department of Agriculture statistics document that agriculture is an important component of the economy in nearly all Montana counties (Map 1). However, about eighty percent of the agricultural cash receipts are generated in the three MDT financial districts east of the Rocky Mountains. Among Montana's counties, Chouteau and Yellowstone generated the most agricultural receipts, \$135 million and \$127 million respectively, in 1992. Cattle, wheat and barley are Montana's three largest agricultural commodities.

POLICY PAPER

Map 1  
Agricultural Cash Receipts, 1991



Source: Montana Agricultural Statistics Service



## Exhibit A Agricultural Receipts

MDT Financial District	Agriculture Cash Receipts 1991 (thousands of dollars)
Montana Total	\$1,502,033
Northwestern Region	126,063
Southwestern Region	202,197
Northcentral Region	552,100
Southcentral Region	402,626
Eastern Region	438,128

Total cash receipts from crops and livestock in Montana increased moderately over the past decade. Dr. Myles Watts, Professor of Agricultural Economics at Montana State University forecasts agriculture will continue to be a major contributor to the Montana economy. However, a wide array of issues may affect the overall profitability of Montana agriculture. For example, crop and cattle prices are subject to wide variation as a result of changes in the world market. Such changes are difficult to forecast in advance.

- "Ninety-two percent of Montana's wheat crop is shipped by rail".  
(Source: Montana Agricultural Statistics Service)

Assuming past trends provide an accurate prognosis for the future, agricultural industries will continue to be a major user of the Montana transportation system. Due to the bulky nature of agricultural commodities, efficient rail transportation is particularly important. Ninety-two percent of Montana's wheat crop was shipped by rail in 1993. Rail's share of the Montana grain transport business has increased steadily since the early 1980s.

The dominance of rail as the mode of choice for Montana grain shipments translates into reduced road damage and potentially safer rural highways on long-haul grain transportation corridors. However, this advantage may be offset by new use of semi-trailer trucks for short-haul farm to elevator movements. To gain efficiencies in the rail transportation system, rail

reloading and grain storage facilities have been consolidated into fewer locations. As a result of the longer haul from the field to the elevator system, many farmers find it more efficient to utilize five axle tractor-trailers rather than the traditional two axle farm truck. Not only are there more road miles being generated due to longer hauls from the field to the elevator, but the weight of the vehicles is increasing. Consequently, road damage saved on long-haul routes is being shifted onto short-haul farm to market roads. There is currently concern about the impact on the highway system, especially from overweight trucks, of Canadian grain shipments coming south into Montana.

## 2. Mining

Mining is a traditional mainstay of the Montana economy. In 1993, Montana mining industries generated over \$250 million in wages, salaries and business profits. Montana's largest current centers of mining activity are located across the southern tier of the state (Map 2).

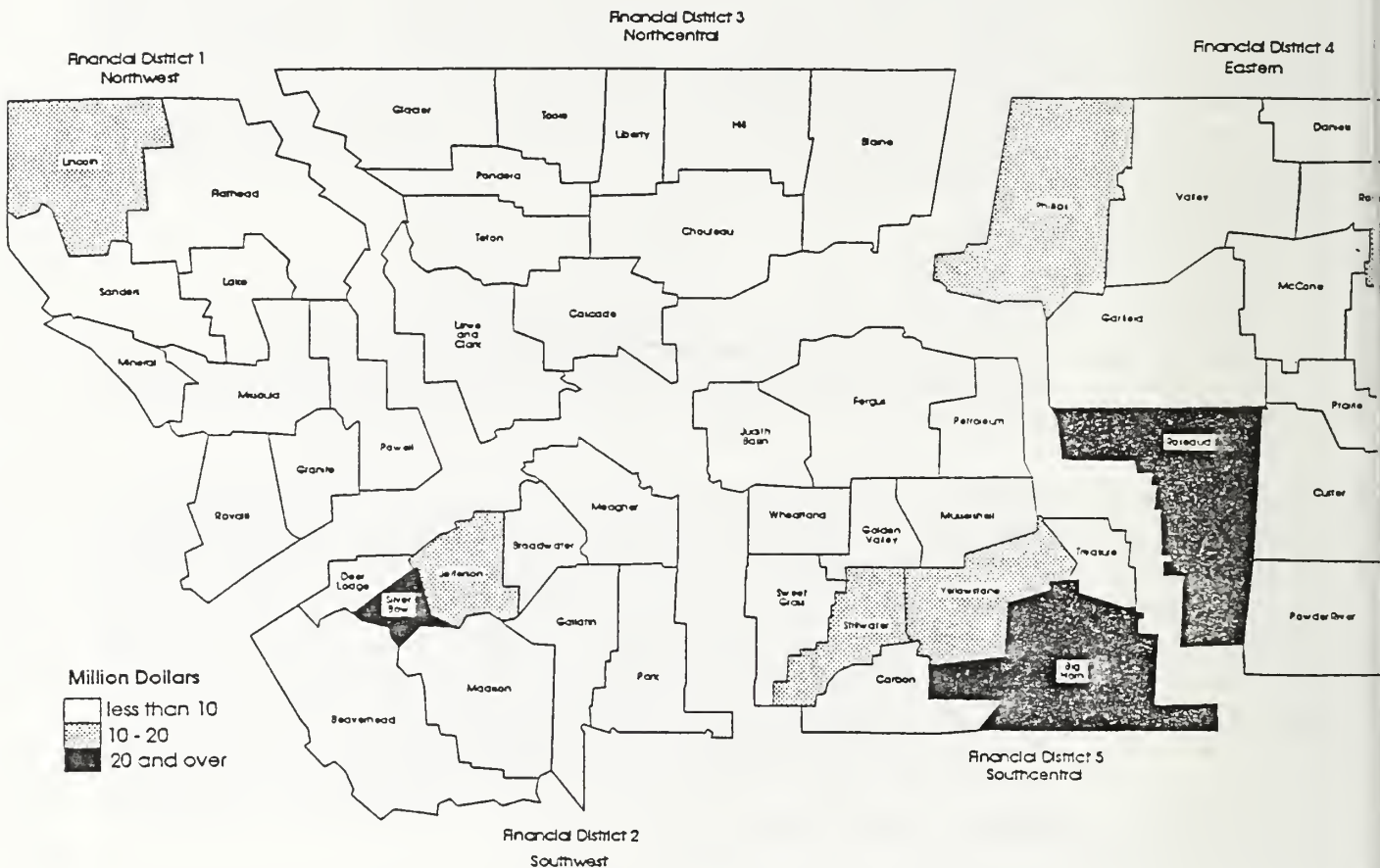
Nonfuel mineral mining accounts for more than 80 percent of Montana's current activity. The nonfuel minerals industry includes several sectors: metal mining (gold, silver, platinum and copper) and nonmetal minerals such as sand and gravel. The value of nonfuel mineral production in Montana peaked at \$685 million in 1988 with higher metal prices. However, the value of production has fallen by 30 percent since then as metal prices have declined. The future of Montana's nonfuel mineral mining industries is closely linked to world metal prices. If metals prices should once again rise to mid-1980 levels, a resurgence in Montana's mining activity can be expected.

A modest amount of coal mining also takes place in Montana. Approximately 40 million tons of coal is removed from Montana mines annually. However, the current rate of coal mining does not begin to tap the extensive reserves available throughout the state. This coal has a low sulfur content that increases its value given the requirements on industry arising from the federal Clean Air Act. Montana's coal reserves are greater by a considerable margin than any other U.S. state. Like nonfuel mining activity, coal mining is closely tied to world energy prices. A major increase in world oil and gas prices would likely lead to expanded coal mining activity in Montana.



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Map 2  
 Wages, Salaries and Business Income  
 from Mining Activity, 1993



Source: National Planning Association Data Services

## Exhibit B Earnings From Mining Activity - 1993

MDT Financial District	Earnings From Mining Activity 1993 (thousands of dollars)
Montana Total	\$250,100
Northwestern Region	28,600
Southwestern Region	65,300
Northcentral Region	17,200
Southcentral Region	17,300
Eastern Region	54,600

Coal is shipped almost exclusively by rail. Every major mine in Montana is served by the Burlington Northern Railroad. Ninety percent of current production is from the Powder River Region and this is all shipped out of the state by rail.

Overall, the potential for expanded mining activity in Montana is significant. Historical trends suggest that the rate of mining extraction for both nonfuel minerals and coal will likely go through significant swings over the next twenty years depending on changes in world markets. This potential suggests a special challenge for Montana transportation planners. Uncertainty over the duration of potential mining activity expansions makes it more difficult to plan for and justify major transportation system investments that may be needed to support increased volumes of mineral shipments. However, this problem is somewhat mitigated by recent economic diversification in Montana's primary mining communities. With increased diversification, major swings in mining activity are less likely to produce the boom and bust cycle witnessed during the 1970s and 1980s. As a result, long-term transportation needs in mining dependent areas will likely become more predictable.

### 3. Wood Products

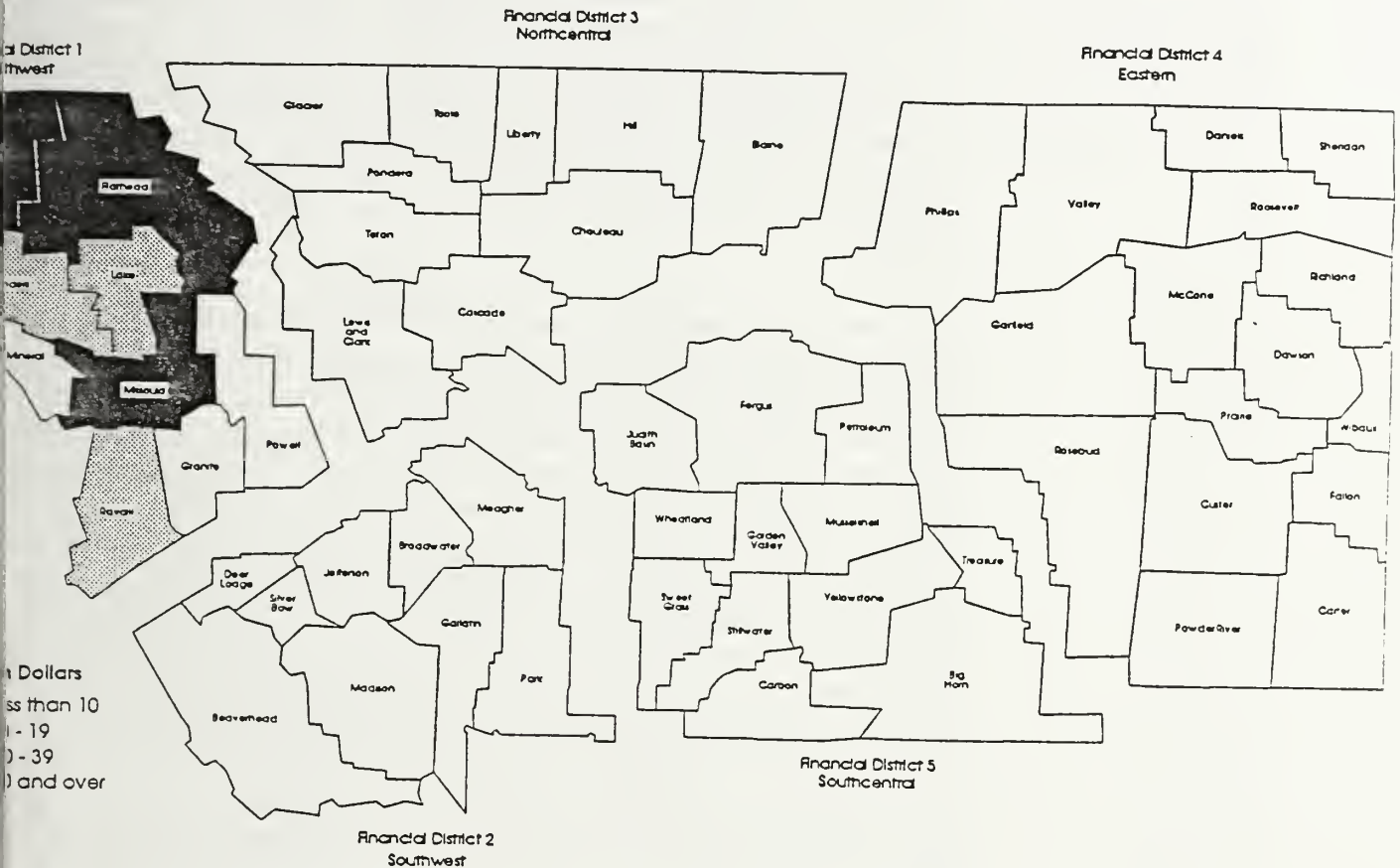
Data compiled by the University of Montana's Bureau of Business and Economic Research indicates the 1993 sale value of Montana's wood and paper products totaled nearly \$1.4 billion. Wood products processing activity is concentrated heavily in the northwestern half of the state (Map 3).

The following factors will affect future demands for transportation (Montana Business Quarterly, Spring 1994 and School of Forestry, The University of Montana)

- **Much lower timber offerings from the National Forests.** The timber industry in the Northwestern and Rocky Mountain Regions of the United States is undergoing a major restructuring that will have transportation implications. Dramatically lower timber offerings from National Forests will influence both the future level of wood products processing and the geographic location of timber harvests. In the late 1980s, more than 510 million board feet per year were harvested from Montana's National Forests. According to the U.S. Forest Service, National Forest timber offerings will likely fall to well under 200 million board feet by the late 1990s.
- **Limited availability of timber on private industrial lands.** Volumes of standing timber on private industrial lands are simply not adequate to counteract make up for the shortfall caused by reduced supply from National Forests. The future of private non-industrialized timber lands is unclear for Montana's future timber supply over the next twenty years. Recently, the harvests from non-industrial private timber lands has more than doubled, compared to the late 1980s. Private land owners are responding to dramatically higher stumpage prices offered over the last two years. Higher stumpage prices are due to a limited timber supply, combined with a strong national demand for lumber products. Provided the national economy remains strong and construction growth continues, it is reasonable to assume price incentives will remain to encourage increased timber sales from private non-industrialized timber lands.

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Map 3  
 Lumber - Related Labor Earnings, 1992



Source: U.S. Bureau of Economic Analysis

Note: As a result of undisclosed county-level data from the U.S. Bureau of Economic Analysis it is not possible to accurately calculate totals for MDT financial districts.



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A reduction in timber available from Montana's National Forests combined with a potential increase in timber harvested from private non-industrial timber lands, has implications for the state's transportation system. Timber supply projections prepared by the University of Montana School of Forestry indicate that the total volume of Montana timber shipments will likely decline by at least 25 percent by the end of this decade. The state's National Forests are located primarily in the western regions of Montana. Private non-industrial timber lands tend to be located in the central and eastern regions of the state. Consequently, the anticipated supply shifts will focus future logging and associated transportation needs farther to the east than has been traditional in Montana.

- **The potential for expanded harvests from non-industrial private forest lands.** Current industry trends suggest potential changes in the volume and geographic location of timber processing activity. Most observers of the Montana forest products industry expect some reduction in overall wood products processing activity over the next twenty years. However, the decline in processing activity is not anticipated to be as great as the decline in timber availability. This prediction assumes a continued strong international economy and corresponding strong demand for wood products. As timber becomes more valuable, utilization of formerly unprofitable materials becomes profitable. A national trend towards more value-added local processing of available timber makes it possible to employ more people and higher wood products sales with a lower volume of raw logs. For example, dimension lumber that may have previously been exported to other states or countries for further processing is now more likely to be made into furniture or recreational equipment at the local level, creating new employment and income opportunities.
- **A trend toward increased value-added processing of limited timber supplies.** Montana trends in wood products processing will also lead to changing transportation system demands. In particular, the trend toward increased value-added processing may place increased volumes of wood products on Montana's highways. A survey of industries in the state of Washington found that producers of specialized value-added wood products are considerably more likely to utilize highway transportation than producers of saw-timber, who are more likely to utilize rail transportation.



### Exhibit C 1992 Labor Earnings in Montana

Manufacturing Industry	Labor Earnings 1992 (millions)	% of Total Manufacturing Earnings 1992	% Earnings Growth 1990 - 1992
<i>Total Manufacturing</i>	730,994	100.00%	11.07%
Lumber and Wood Products	292,837	40.06%	8.67%
Manufactured Food Products	66,024	9.03%	8.46%
Printing and Publishing	59,051	8.08%	11.23%
Primary Metals	58,685	8.03%	-2.71%
Petroleum and Coal Products	52,595	7.19%	38.79%
Paper Products	39,231	5.37%	10.96%
Miscellaneous Manufacturing	31,231	4.27%	49.57%
Stone, Clay and Glass	28,937	3.96%	8.48%
Chemical Products	21,870	2.99%	5.02%
Fabricated Metal Products	17,054	2.33%	7.00%
Machinery and Equipment	16,335	2.23%	-4.37%
Apparel and Textile Products	13,200	1.81%	23.72%
Furniture and Fixtures	8,308	1.14%	45.04%
Instrument Products	7,779	1.06%	36.21%
Electrical Equipment	6,264	0.86%	-22.38%
Motor Vehicles	5,180	0.71%	10.87%

Source: U.S. Bureau of Economic Analysis

Industry trends suggest a potential decentralization of timber processing activities. Specifically, reduced timber supplies in the west, combined with potential increased supplies in the eastern half of the state, provides incentive for relocation or development of processing facilities farther to the east than traditional processing centers. The site requirements of potential new value-added wood products manufacturers enable owners to choose locations outside of traditional wood manufacturing regions.

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Overall, wood products industry trends suggest significant changes in long term transportation use. Most important is the potential shift from concentrated activity in western counties to locations in central and eastern Montana. Timber processing facilities are likely to be more dispersed thereby reducing wood product volumes within western regions and increasing traffic volumes on highways in central and eastern Montana. Provided that Montana follows the national trend towards more value added wood processing, the reliance on highways for wood product shipments will increase, while the reliance on the rail system will decrease.

#### **4. Diversified Manufacturing**

The U.S. Bureau of Economic Analysis estimates 1992 Montana labor earnings from manufacturing activities at nearly \$731 million dollars. Lumber and wood products is the dominant Montana industry, providing 40 percent of the total manufacturing earnings. The remainder represents a diversified group of manufacturers ranging from sugar beet processing to primary metals to petroleum refining.

Although lumber and wood products will likely continue to be the large manufacturing industry over the next twenty years, the data points to a trend towards increased economic diversification. Petroleum and coal products, furniture and fixtures, instrument products and apparel are examples of Montana's fastest growing manufacturing industries.

In general, Montana manufacturing activity is concentrated in urban centers. In 1990, Montana's seven major urban counties accounted for nearly three-quarters of the statewide manufacturing activity. Measured by 1990 annual earnings, Flathead and Missoula have the large concentration of manufacturing activity.

Long-term economic projections for Montana indicate a trend toward decentralization of manufacturing activity over the next twenty years. Manufacturing earnings in Montana's rural counties are expected to grow at an annual rate three times that of urban counties between 1990 and 2010. Consistent with general economic trends of the state, rural counties adjacent to urban areas typically are among the fastest growing manufacturing centers. However, a number of more isolated counties such as Sheridan, Custer, Phillips and Roosevelt Counties are also projected to experience rapid growth over the next twenty years.

### Exhibit D

#### Montana Manufacturing Earnings, 1990 - 2010

	Manufacturing Earnings 1990	Manufacturing Earnings Projected 2010	Annual % Change 1990 - 2010
Montana Total	561.8	728.8	1.49%
Urban County Total	405.8	485.8	0.99%
Cascade	23.2	5.7	-3.77%
Flathead	109.8	135.8	1.18%
Gallatin	33.3	59.4	3.92%
Lewis & Clark	20.9	22.2	0.31%
Missoula	113.4	141.2	1.23%
Silver Bow	13.6	15.2	0.59%
Yellowstone	91.6	106.3	0.80%
Rural County Total	155.8	243	2.80%

Source: National Planning Association Data Services

Montana's decentralization of manufacturing into more rural areas is consistent with national trends. Rapidly growing manufacturing industries tend to be based on relatively small value-added products that can efficiently be produced outside of major urban centers. Location near major markets and suppliers is becoming less important for manufacturing industries than in the past. The labor force limitations of rural counties is less of an issue because new plants tend to be relatively small. The rise of advanced information technologies enable plant managers to communicate with remote markets from almost any location.

The potential for an increased level of diversified manufacturing, with a particular focus on new development in rural counties, is again an indicator of increased future truck volumes on rural highways. The greatest increases in truck traffic will likely occur in rural counties adjacent to established metropolitan areas across the southern tier of the state and in the areas of Ravalli, Lincoln, and Flathead Counties. Access to quality air transportation in rural counties will also become more important because many of the growing rural manufacturers sell to national and international markets.



## B. Montana's Service Economy

Service businesses include personal and business services such as health care, day care, food processing, and legal services; financial services such as banking, insurance, and real estate; and retail and wholesale trade. Wage, salary and business profits earnings from private service enterprises has grown steadily in Montana since the mid 1970s. Earnings from service-related businesses continued to grow while Montana's timber, mining and agricultural industries staggered during the late 1970s and early 1980s. Services are projected to grow at a rapid pace over the next twenty years.

The rapid growth of the Montana service economy mirrors national trends. A considerable proportion of this service growth is due to an aging and more affluent population, a growing demand for business support services, and an expanded concern for environmental quality. Health and elderly care, for example, are at the top of the list of growth industries in Montana and the nation as a whole.

Montana's service sector benefits from significant growth in tourism and recreational travel. The University of Montana's Institute for Tourism and Recreation Research estimates that more than 6 million nonresidents entered Montana by car in 1993, an increase from 4.5 million during the mid-1980s. Montana airport deboarding also grew substantially during the past three years to reach nearly one million in 1993.

Montana's National Parks and ski resorts are among the most popular travel and tourism destinations. Visitor counts at both National Park and ski areas increased steadily during the 1990s.

County level accommodations tax collections are compared in Map 1. Accommodations tax collections are one measure of the regional focus of travel and tourism in Montana. Three Montana Counties (Flathead, Gallatin and Yellowstone) had accommodation tax collections in excess of one million dollars in 1993. Each of these counties are a center of business and tourist travel. The two most western MDT financial districts account for nearly two-thirds of accommodations tax collections.

Nonresident travel and tourism is expected to grow over the next twenty years. Several trends including a growing population in the United States and Canada with increased leisure time and a new international interest in the Native American Culture will contribute to continued growth of tourism. As Montana's economy continues to grow, additional business travel should be expected. However, the extent of future growth is closely linked to both national and

international economic trends. For example, international exchange rates, particularly with Canada, make it less attractive for Canadians to visit the United States. In times of national economic recession, Americans have less discretionary income to spend on tourism and business travel is more limited. Consequently, nonresident travel in Montana is expected to go through modest upswings and downswings over the next twenty years but will generally continue at a rate similar to that of the past five years.

The growth of Montana tourism raises issues for statewide and regional transportation planning. In particular, as visitor numbers increase, traffic volumes on key routes utilized by tourists also increase. Issues of congestion and potential safety problems may become more prevalent, particularly for destination areas served by secondary roads.



The map displays the Denver area divided into five financial districts, each with its own set of census tracts. The tracts are shaded according to their median family income, with a legend in the bottom left corner.

**Financial District 1 Northwest**

**Financial District 2 Southwest**

**Financial District 3 Northcentral**

**Financial District 4 Eastern**

**Financial District 5 Southcentral**

**Dollars**

- less than 100,000
- 100,000 - 499,999
- 500,000 - 999,999
- 1 million and more

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## **II. MAJOR ECONOMIC DEVELOPMENT ISSUES**

Montana's transportation system is a key factor affecting economic development. Although the system generally works well, there are a number of opportunities available to enhance its link to economic development.

The major transportation related economic development issues that confront the state as it moves into the twenty-first century are:

- Ensuring access between rural areas and the state, national, and international economies.
- Supporting local economic development.
- Helping Montana benefit from increased international trade.
- Supporting tourism development.

These issues are discussed below in the context of their implications for the transportation system.

### **A. Ensuring Access Between Rural Areas and the State, National, and International Economies**

Montana is primarily a rural state with several major regional service centers. Access throughout the State to the transportation system is important because the economy is dependent upon access to external markets. For example, the agricultural sector, the foundation of Montana's export base, is reliant upon out of state markets. Statewide, agriculture generates \$2 billion in annual cash receipts, the largest income producing industry in Montana (Bureau of Business & Economic Research, 1994 Economic Outlook Seminar). Providing the infrastructure that enables these products to be efficiently shipped to out of state markets is a critical economic development function of the transportation system.

#### **1. Preservation and Maintenance of the Primary and Secondary System**

The preservation of the primary and secondary rural highway system is important for economic development. Preserving this system is a prerequisite for maintaining access to and from rural areas. Preservation and maintenance improves system efficiency and indirectly encourages job retention. It can also help to direct new development.

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Targeting capacity improvements to primary routes and providing essential maintenance to secondary routes allows the state to increase public benefits in a cost effective fashion. Economic change and development pressure often creates infrastructure needs. From an economic development perspective, successful infrastructure projects are those that anticipate and respond to market needs.

**2. Maintaining Existing Levels of Air Transportation Service**

In recent years, Montana has experienced considerable change in the availability of air transportation services. The provision of commercial service is determined by market demand, with the exception of communities receiving Essential Air Service subsidies (Montana State Aviation System Plan, 1989). Larger cities have experienced increased demand and are coping with higher traffic (The 1994 Outlook for Travel and Tourism in Montana), while many smaller cities struggle to retain existing service.

Many small cities and rural areas, especially those in the northeast part of the state, are concerned about the potential loss of air service. There is a need to maintain air transportation services to support economic development. Good access to air transportation is usually a necessary but not sufficient condition affecting economic development in rural areas. Airport access is especially important for niche marketing, "just-in-time" manufacturing, and the growing tourism industry. Moreover, the quality of air transportation service can influence business investment decisions.

**3. Preventing Further Branch Rail Line Losses**

Rail continues to be an important mode of transport in Montana, including bordering states, and Canada. Montana's freight rail system has experienced ownership consolidation, minor increases in freight traffic, and nearly 1,400 miles of line abandonments over the past decade (1999 Montana State Rail Plan Update).

Montana's agricultural, mining, and forest products are major economic sectors that require rail transportation for shipments. Therefore, it is important to maintain existing levels of rail service throughout the state. Montana's basic economic sectors rely on freight rail and trucking for shipping bulk commodities.

Branch rail lines are an important asset to Montana because they connect isolated communities, whose economies are often based upon or



industry, to the main line rail system. The threat of further route abandonment persists as carriers seek operating efficiency, yet many branch rail lines that are not currently profitable may prove to be valuable to the state's economy in the future. This appears evident given the parallel between freight rail traffic and the cyclical nature of natural resource based industries.

#### **4. Maintaining Passenger Rail Access**

Passenger rail ridership increased overall in Montana by 16,000 persons between 1990 and 1993, an increase of over thirteen percent statewide (Amtrak, Office of Government Affairs). Passenger rail in Montana is the sole alternative to automobile travel in several communities. The bulk of the ridership increase was tourism-related, occurring at Whitefish and Glacier Park. Between 1990 and 1993 ridership at these stations increased by 18,215 boardings and deboardings, or 31 percent. Ridership at the other stations has been stable or declining. Moreover, "...Amtrak provides many business owners delivery service. Shipments of medical and pharmaceutical supplies, fresh cut flowers, small farm parts for implement dealers and other shipments of package and express items are delivered daily by train. During severe weather, it is virtually the only means of travel in the northern portion of the state" (1993 Montana State Rail Plan Update).

### **B. Supporting Local Economic Development**

Community vitality often depends upon economic diversification. Many communities in Montana are actively seeking to diversify their economies because of the "boom and bust" nature of the traditional basic industries and the need for additional job opportunities. Local economic development strategies vary; some target small businesses or retirees, many seek to develop value-added industries or tourism. Each type of industry has distinct transportation needs that can be supported by efforts ranging from high profile highway signage to lure traffic into small tourist-oriented towns, rail to retain bulk commodity related activities, or airport facilities and services that help to develop industrial land.

Transportation investments are costly, yet commonly have significant economic development implications. Aside from new highway construction, several strategies and relatively minor actions may induce new investment, and ultimately economic growth. Some economic development-related transportation investments that are applicable for MDT consideration follow:

## 1. Signage to Promote Local Features

A key component of tourism related economic development is signage. Without sufficient notification, communities are often invisible to the tourist-traveler unless they are a pre-determined destination. Therefore, it has become relatively common on interstate routes to advertise or notify travelers of local attractions and attributes. However, similar signage is uncommon on most state highways and local routes.

## 2. Rest Areas in Communities

Isolated rest areas are normally quite expensive to maintain. Therefore, in recent years, six Montana communities participated in a city parks and rest areas program. Under this program, funds generated by the motor vehicle fuel tax were allocated to local communities to pay for the construction of rest areas along state highways.

Rest areas were built through the city parks and rest areas program using \$100,000 of state funds per rest area. In many cases local communities provided in kind resources through volunteer time to assist in development. These costs contrast with the \$500,000 to \$900,000 common to interstate rest areas built using federal funds. Once built, maintenance of the facilities became the responsibility of the local jurisdiction.

From the state's perspective, community park based rest areas resulted in a cost savings and improved facilities. Economically, the program benefited local communities by indirectly attracting commerce. In general, the city parks and rest areas program was very successful until funding was cancelled by the State legislature. A backlog of qualified localities remains.

## 3. Providing Infrastructure to Attract Industry

Accessible quality infrastructure is unquestionably an important component of business location decisions. However, infrastructure construction is costly and the benefits realized from speculative building can be minimal. Therefore, it is important to match the system to expected growth.

The provision of infrastructure to support economic development is often best targeted to areas that are growing rapidly and show potential for continued progress. This is commonly done by expanding capacity on key surface routes, up-grading rail facilities, and improving airport access. Montana appears to have responded well to economic development related



infrastructure needs in recent years. Because of the competing demands of local jurisdictions for economic development related improvements, care must be taken to avoid the speculative provision of transportation infrastructure in hope that it will generate economic development.

## **C. Helping Montana Benefit from Increased International Trade**

International trade could effect Montana considerably because of the State's geographic situation. Being a border state, Montana will most likely experience freight traffic growth as United States' trade with Canada increases.

There is an expectation that Montana's economy can benefit from increased volumes of international trade by investing in the transportation system. However, the extent of these benefits must be weighed against the costs of new investments. Most recent investment has been directed towards truck routes and corridors. From the rail industry's perspective it is unlikely that there are rail-related economic benefits to be gained in Montana as a result of international trade. What is most significant for Montana is whether infrastructure improvements will facilitate economic development in the state or whether they will merely help trucks pass more quickly and efficiently through the state.

### **1. Development of Intermodal Transfer Facilities**

Intermodal transfer facilities are ports, stations, or terminals, where goods are transferred from one mode of transport to another. "Moving freight by two or more modes in an integrated manner is a practical definition of intermodal transportation" (Transportation and Iowa's Economic Future). For example, lumber might be transferred from logging trucks to trains for long-haul shipments. The Intermodal Surface Transportation Efficiency Act (ISTEA) advocates the development of these facilities to enhance existing transportation systems.

The expansion of intermodal transfer facilities presents Montana with several benefits that will not be realized without costs. Theoretically, intermodal transfer facilities would increase the competitive ability of the state to attract shipping companies and improve the overall efficiency of the freight system. It is argued that Billings is a prime strategic location for the development of a major trucking center that could serve north-south trade between the United States and Canada (Montana Tradeport Authority, 1994). However, freight traffic associated with an intermodal facility could generate more costs to the state than benefits if there is insufficient demand, it is poorly designed and/or located. While transfers might still take place within the state, the quantity of through traffic could

result in more wear on roads than could be recovered from user fees and vehicle taxes. Any state involvement in intermodal transfer facilities needs to be based on a careful evaluation of the benefits and costs that can be anticipated. A determination should be made regarding whether there is a viable "market" for the facilities through working with interstate shippers.

## **2. Improvements to Border Crossings**

Recent changes in Montana's economy, regional growth in the Canadian provinces of Alberta and Saskatchewan, and national trends suggest that traditional flows of trade are changing. The North American Free Trade Agreement, and the General Agreement on Tariffs and Trade have increased north-south goods movement between the United States and Canada, and between the United States and Mexico. There is increased trade through Montana, making the state's border with Canada more active.

The physical condition of border crossings between Canada and Montana is a concern. For example, the Sweetgrass-Coutts border crossing located on Interstate 15, has not been improved since the 1930s. Despite being the busiest crossing in Montana, the lack of modernization regularly causes delays and tends to inhibit trade (Governor's Trade Advisory Council, 11/16/93). This crossing is of particular importance because "...handles between 60 to 70 percent of Canadian exports in the [Rocky Mountain] region and over 55 percent of U.S. exports. This amounts to \$2 billion in two-way trade by commercial vehicles, up 38 percent to \$555 million since 1988" (Assessment of Border Crossings and Transportation Corridors for North American Trade, 1993).

The importance of addressing the efficiency of border crossing facilities is reflected by the potential for economic development. Increased border efficiency would result in overall efficiency gains for Montana's transportation system and be a key element in increasing the market for any intermodal facilities in the state.

## **3. Participation in Efforts to Develop International Interstate Trade Corridors**

Many constituents and interest groups within the State argue that the development of a trade corridor between Canada and Mexico that passes through Montana could be beneficial (Governor's Trade Advisory Council 1/18/94). The rationale for participation in trade corridor initiatives

that Montana is well positioned geographically to benefit from increased north-south trade that is expected to occur between Canada, the United States and Mexico. Participation in trade corridor initiatives, it is argued, would position the State so that it benefits from the increased flow of trade. Montana's geographic location as the northern-most state through which Interstate 15 passes presents a potential source of economic development.

A key consideration for Montana is whether the state would benefit from increased trade and associated truck traffic. Developing an international trade corridor serving a national function would create added infrastructure costs because of the impacts of increased truck traffic on pavement conditions. Therefore, evaluation needs to consider this issue. In addition, through traffic has a less beneficial economic impact than freight movement that stops. An evaluation needs to address the relative costs and economic development benefits of more through traffic and the extent of other economic benefits generated by infrastructure improvements.

#### **D. Supporting Tourism Development**

Tourism continues to grow in Montana. The Department of Commerce has a major economic development focus on tourism. The economic development and transportation aspects of tourism are significant, particularly in rural areas. From a transportation perspective, the majority of tourism's impact is centered on automobile and air travel, which relies primarily on the convenience of access to scenic destinations, although, Glacier National Park in the summer and Big Mountain Ski Area in the winter, are also accessed by passenger rail.

Tourism benefits to the Montana economy are significant. "Tourism over the last decade has out-paced all other natural resource-based industries. The [Montana] Department of Commerce estimates the tourism industry already directly or indirectly created 33,000 new jobs and will create thousands more before the year 2000" (Montana Business Annual, March/April 1994).

A key trend affecting tourism is the decrease in the length of vacations and increase of international visitors. In addition, other regions aggressively compete for tourist dollars. These trends create the need for good transportation access. Continuing to meet tourist related transportation needs will help support Montana's economic development goals.

The following discusses the types of activities that the MDT could undertake that would benefit tourism:



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**1. Management of Corridors to Reflect Tourist Needs**

Tourism travel in Montana is concentrated in several surface corridors, primarily in western and southwestern portions of the state. While these corridors are sufficient for local traffic during off-peak periods of the year (spring and fall), seasonal congestion is common.

Congestion can act as a deterrent to tourism. Areas that are heavily reliant upon tourist trade will most likely suffer if congestion becomes regular in their communities. There are also tourist related safety needs. Identifying and addressing tourist related needs at a corridor level could support economic development.

**2. Enhancements to Improve the "Tourist Experience"**

Tourist-related economic development is affected by the quality of the "tourist experience" offered. The most important components affecting the Montana "tourist experience" are convenience and aesthetics. Given that the majority of tourists visit the state to enjoy its scenery and outdoor activities, efforts to improve the quality of tourist corridor routes and access to recreation sites is important.

Of particular significance to TranPlan 21 is that driving for pleasure is a major component of tourism. The Forest Service notes that "driving for pleasure" is the most frequent recreational experience of visitors to the National Forests. Therefore enhancements that ensure good connections between the statewide highway system, county roads, and forest roads could facilitate tourism and recreation. This requires coordination between the MDT, the local road agency, and the Forest Headquarters responsible for the particular National Forest. Improving connections would require identifying and signing access routes.

Tourism-related economic development depends upon tourists spending money in local economies. Indicating the services available in communities located along Interstate routes draws tourists and assists development. While this principle appears to work well in these communities, the concept has not been applied to non-interstate routes. Furthermore, the signage that currently exists is service oriented, but often does not indicate the non-commercial historical attractions of communities that might induce tourists to stop.



Other components important to the Montana "tourist experience" are based upon improving public facilities along tourism routes. These include rest areas, picnic areas, pull-outs at scenic vistas, areas designated for wildlife watching, and others.

### **3. Environmental Degradation that Could Impact Tourism**

Montana markets its scenic beauty, national parks, rustic character, and plethora of outdoor activities. The level of transportation system maintenance has an impact upon the perception of tourists and the impression left. Therefore, litter collection and other maintenance functions are important components of tourist development.

## **III. ADOPTED POLICY GOALS AND ACTIONS**

The policy goals and planning actions that will be implemented by the MDT to address the issues and perceived needs described in the preceding sections are outlined below.

### **A. POLICY GOAL A. Promote a transportation system that provides cost effective access for Montana's export oriented ("basic") industries to regional, national, and international markets.**

Economic growth in Montana is dependent upon its export base, which relies on the transportation system for delivery of goods and services to markets external to the state. The MDT will seek to construct and manage a transportation system that guarantees "basic" export-oriented industries access to external markets in neighboring regions, the nation as a whole, and the global marketplace.

**ACTION A.1.** Work with shippers and private providers on a continuing basis to identify barriers to be overcome and transportation improvements that will enhance access to regional, national, and international markets.

This action involves surveying a sample of shippers and private transportation providers annually to identify the most significant trade-corridor needs, regulatory constraints inhibiting trade, and other issues. The results of the survey will also be used to measure transportation system performance. By engaging in an ongoing process, the MDT will be able to adjust policies to reflect the needs of the market in a timely fashion. Establishing an interactive relationship between the MDT and its constituents will increase the potential for system efficiency and related economic development. A questionnaire will be used to survey freight transportation interests. Results from these meetings will be an input to the

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Intermodal Management System and program development. In addition, the survey will allow the MDT to measure their success in addressing priorities.

Level of Effort

Initial Year 1: 320 Staff hours to design a survey instrument (questionnaire) and the survey sample. Each year the survey will be administered and the results tabulated.

Annually: 120 Staff hours

Timing: Twelve month intervals beginning January, 1994

**ACTION A.2.** Prioritize support for "basic" industries as a criteria in programming and project selection.

This involves considering the role the transportation system plays as infrastructure supporting the basic sectors of the economy as a criteria in programming and project selection decisions.

Level of Effort

Initial Year 1: 40 staff hours. Staff effort to incorporate into programming and project selection process.

Annually: Minimal. The action will be incorporated into current programming and project selection process.

Timing: Ongoing as part of program development.

**ACTION A.3.** Work with commercial air carriers to maintain and enhance existing levels of service.

Recent years have witnessed a decrease in commercial air service, Montana. Although this has been a response to deregulation and change in the organization of the air carrier industry over which the MDT has little influence, the Department will work with carriers to identify service problems before they occur. A proactive approach to maintaining existing levels of air service is important to the state's economy because of the important economic role of air transportation.

This action involves the Division of Aeronautics acting as a facilitator and promoter of commercial scheduled air service in Montana. This role will identify critical issues that inhibit commercial service that can be addressed by government. This activity has already begun to take place in some areas, for example the Division has been active in encouraging Frontier airlines to initiate scheduled service.

Level of Effort:

Initial Year 1: 160 to 200 Staff hours

Annually: 160 to 200 Staff hours

Timing: Ongoing communication with commercial air carrier representatives already takes place

**B. POLICY GOAL B. Ensure state and local economic development policies, plans and priorities are factored into transportation planning and programming.**

Promoting economic development is a high priority for Montana state and local governments. The management and development of the transportation system will support the economic development activities of these governments. Therefore, several steps will be taken to coordinate the MDT's public interests with those of private enterprise.

**ACTION B.1.** Hold annual meetings with Department of Commerce regional development officers to discuss and review long-range plans, identify local and regional industries, infrastructure concerns, and transportation impediments (if any).

This action will increase the MDT's understanding of transportation-related economic development needs. Coordinating the state and regional transportation needs perceived by the Department of Commerce with the MDT will increase the awareness of local needs, perceptions, and problems. By gaining a better understanding of local and state-wide economic development issues, the MDT will be better able to assist in the facilitation of business retention and expansion. In turn, the Department of Commerce will better understand the MDT's planning and project development activities. In short, improved communication between commerce and transport will benefit the state through an improved awareness of transportation related issues that effect development.

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The Department of Commerce addresses economic development at the region level. Therefore, one meeting will take place in each region involving the District and the appropriate Headquarters Staff.

Level of Effort:

Initial Year 1: 80 total staff hours to initiate annual meetings to identify short term issues and long term directions of the MDT and Department of Commerce affecting economic development.

Annually: 60 hours

Timing: Initiation in 1996. Current economic development issues already documented by TranPlan 21.

**ACTION B.2.** Factor state and local economic development program priorities into the programming process.

This involves coordinating decision making for funding economic development and transportation improvements. To implement this recommendation it will be necessary to include the contribution to economic development as a criterion for project selection or as part of the programming process.

Level of Effort:

Initial Year 1: 40 to 60 staff hours initial effort to determine how to incorporate development goals into MDT's programming process.

Annually: Minimal, the action will be incorporated into the current programming process

Timing: Ongoing, beginning in 1996.

**ACTION B.3.** Establish a new city park and rest area Program to encourage visitors to contribute to economic development.

This action initiates a new city park and rest area program, if approved by the legislature. In the past this program was highly cost effective, producing indirect spill-overs to benefit cities and towns. It involves the construction of rest-stop facilities in municipal areas, rather than in costly isolated locations. Locating rest stops in municipal areas will reduce vandalism, common at isolated locations, while pulling travelers into communities. This will also reduce the direct costs



to the state of providing rest facilities by over 50 percent, while indirectly producing positive effects on local trade and commerce.

Level of Effort:

Initial Year 1: Staff 240 hours to initiate program. Initiation will involve establishing a process for selecting projects. Level of capital funding will depend on priorities although past efforts averaged approximately \$100,000 of state funds per site.

Annually: 200 hours to manage program until program funds exhausted. Among the funding questions are whether enhancement funds will be used, and if other non-MDT funding sources are available.

Timing: Dependent upon availability of funding.

**C. POLICY GOAL C. Engage in multistate and regional initiatives that facilitate international trade.**

The increased role of international trade in the national and Montana economy and the passage of the North American Free Trade Agreement increases the importance of integrating the state into the national and international economy. It also creates an opportunity for helping Montana to improve its local economies and benefit from increased volumes of trade passing through the State.

**ACTION C.1.** Participate in an examination of multistate trade corridor initiatives.

There are a number of competing trade corridor initiatives on a national and regional level sponsored by both public and private interests. Neighboring states are positioning themselves to compete for designation as an international trade corridor. The MDT will cautiously collaborate in efforts with other states to determine the nature of demand for a corridor, to weigh the benefits against the costs, and to determine whether the development of an interstate trade corridor passing through Montana is good for the State.

In determining whether to contribute existing funds into the implementation of a trade corridor, Montana will ensure that any benefits outweigh the additional costs that increased use would place on the highway system. Without intergovernmental coordination among neighboring states, the federal government, and the respective departments of transportation, a trade corridor will be difficult to implement

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successfully. Moreover, standardized regulations appear important across state lines and international boundaries with Canada and Mexico for efficient shipping on a potential trade corridor.

At the regional level it will be necessary to improve the physical and administrative infrastructure present at the United States-Canadian border.

Level of Effort:

Initial Year 1: 200 - 400 hours to coordinate MDT planning and programming efforts with the USDOT and Canadian provincial governments. A study process to determine the level of need, extent of physical improvements required and construction will be necessary. Regulatory barriers and restrictions will be identified and required legislative changes specified.

Annually: To be determined.

Timing: 1997, after results from the Western Association of Highway Transportation Officials (WASHTO) Western Trade Network Study becomes available.

**ACTION C.2.** Coordinate with planning undertaken by Canadian Provincial Governments of Alberta and Saskatchewan.

This action involves meeting annually with transportation planners in neighboring Canadian provinces. Planning and actions undertaken north of the United States border are important to Montana, especially if Canada becomes active in a trade corridor effort. System continuity will be ensured and planning action coordinated to the extent possible.

The MDT will coordinate planning in the northern portions of the state with efforts across the border to ensure system continuity.

Level of Effort:

Initial Year 1: 200 hours

Annually: 60 hours

Timing: Initiate in 1995 or 1996.

**D. POLICY GOAL D. Promote tourism and access to recreational, historical, cultural, and scenic destinations through transportation planning and programming.**

Tourism continues to grow as a vital component of the Montana economy. Ensuring the future growth of tourism will require a careful blend of planning and programming to ensure a compatible match of capacity and aesthetic appeal. This balance will be particularly difficult given that the majority of visitors come to enjoy the scenery. However, the policy actions that support tourist-related economic development through the management of the transportation system are identified below.

**ACTION D.1.** Implement the recommendations of the scenic byway feasibility study.

It is important to note that there is a minimal amount of federal funding left to finance scenic byways programs now that the demonstration projects have been funded.

Level of Effort: To be determined

**ACTION D.2.** Prioritize and encourage the development of transportation enhancements that promote tourist access.

This action encourages local jurisdictions to prioritize tourism related transportation enhancements in the selection of Community Transportation Enhancement Program projects.

Level of Effort:

Initial year 1: Staff effort, 360 hours to develop, administer and communicate new information about the enhancement program

Annually: 120 hours to manage program

Timing: Initiate in 1995

**ACTION D.3.** Encourage more tourist oriented directional signing.

This action will assist local communities to promote tourist attractions and local businesses, and prevent the proliferation of billboards obstructing views in scenic corridors

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Traditionally, it has been the MDT's responsibility to regulate and monitor roadside advertisements or signage. An expansion of this role to replicate interstate signage on state routes will take place. Directional signs, similar to those found on interstate routes, will prove to be a good compromise to minimize conflict between billboards and scenic views that appeal to tourists.

Level of Effort:

Initial Year 1: Incorporate as part of existing tourist oriented directional signing program activities

Annually: Incorporate into on-going work activities

Timing: Initiate immediately

**ACTION D.4.** Minimize negative impacts of billboards by implementing recommendations from the Governor's Outdoor Advertising Task Force.

Tranplan 21 recognizes that in a number of key transportation corridors there is a major billboard proliferation problem. The billboards degrade the view shed and negatively affect Montana's image and hence impact tourism. The Governor has established a task force to address these issues and this will provide a mechanism for addressing the billboard concerns identified through TranPlan 21.

Level of Effort:

Initial Year 1: Dependent upon Task Force recommendations

Annually: Dependent upon Task Force recommendations

Timing: After adoption of Governor's Task Force recommendations.

**ACTION D.5.** Maintaining community character that enhances tourism and local economic development will be considered as part of project evaluation.

The image and nature of the business present in portions of tourist oriented communities is a key component of their success. To support economic development goals the MDT will make efforts to incorporate these concerns into planning and programming so that the local economy of tourist towns is supported by transportation improvements.



Level of Effort:

Initial Year 1: 140 staff hours to develop guidelines and review at the district and local levels

Annually: Minimal, will be incorporated into existing business practices.

Timing: Priority within first three years of plan implementation.

#### IV. POLICY GOALS AND ACTIONS NOT ADOPTED

**ACTION A.4.** Ensure that highway capacity improvements and projects have a positive benefit-cost ratio (based on direct capital and maintenance costs compared to user benefits).

*Reason Not Chosen: If implemented this action would result in treating capacity-related economic development projects differently than other capacity improvements. In addition, there is concern that it is analytically difficult to agree on the costs and benefits of individual projects.*

This action restricts all nonsafety-related planned capacity improvements to projects with a positive benefit-cost ratio. This will ensure that they contribute to Montana's economic well being. Given the anticipated funding levels, the state of Montana has scarce resources for expanding the system. However, it is necessary to ensure that any new capacity improvements contribute to economic development. The action will serve as an initial criterion for considering capacity improvement.

The analytical procedure will be restricted to contrasting the cost to government and the benefits to transportation users. The procedure will be limited to direct costs and user benefits and the economic ripple of faster travel times and enhanced reliability. This excludes non-monetary external costs called externalities (a cost is external if it is not paid by the person who imposes it). These costs cannot be readily quantified. They include environmental costs, and aesthetics among others. The weight or value attached to these reflects individuals' and communities' values. They will be addressed as part of the project review process and are a required part of environmental impact statements.

There are a number of analytical procedures that are available for evaluating benefit-cost ratios for highway and rail improvements. This action identifies a straight forward procedure applicable to Montana. On the highway system, the Highway Performance Monitoring System and the Highway Economic Reporting System provide a good starting

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point. The Montana State Rail Plan describes a procedure developed by the Federal Railroad Administration for evaluation of the benefit-cost of branch line improvements.

Level of Effort:

Initial Year 1: 500 to 600 staff hours to establish a methodology and training staff to apply the methodology as part of the project selection process

Annually: Minimal net increase in staff time to incorporate the determining benefit-cost into the project.

Timing: The timing for undertaking the initial year activity will be dependent upon the relative priority attached to this action.

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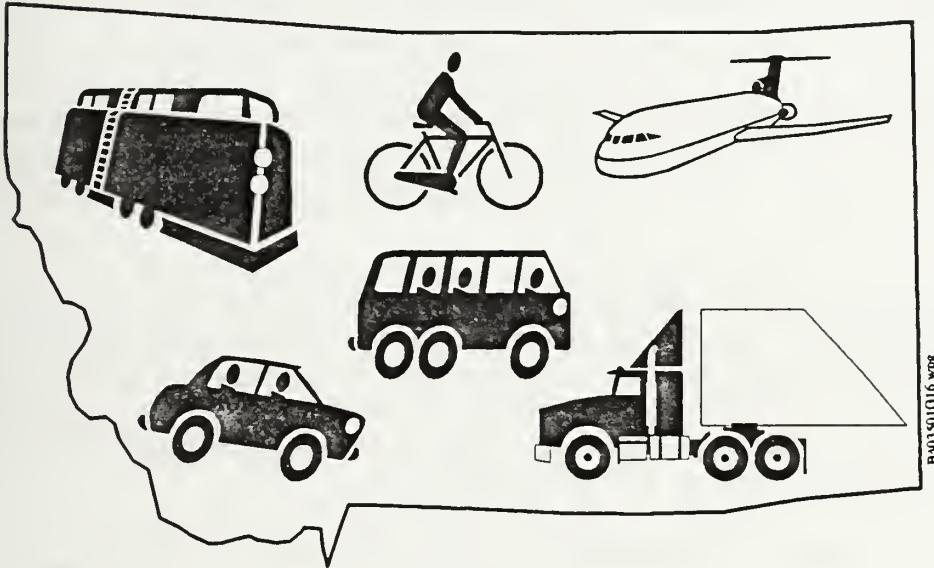
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# Montana Department of Transportation

## TranPlan 21



### FREIGHT MOBILITY

#### Policy Paper

December 12, 1994

prepared by

DYE MANAGEMENT GROUP, INC.

**POLICY PAPER**

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**I. FREIGHT MOBILITY IN MONTANA - BACKGROUND**

This policy paper includes the policies and actions adopted for managing and investing in Montana's transportation infrastructure to ensure freight mobility. Freight mobility is critically important to Montana's economy. The role that freight transportation plays in economic development and the mechanisms through which the management of, and investment in, Montana's transportation system can support economic development are addressed in a separate Economic Development policy paper.

This paper describes the demands on Montana's transportation infrastructure for the shipment of freight and the contribution different modes make to meeting these demands. The principal freight-related transportation issues and policy options for addressing them are assessed.

Freight movement ranging from the shipment of small packages to the movement of bulk commodities such as coal, lumber, or grain is a prerequisite for economic activity. Montana's public and private transportation infrastructure ensures the freight mobility necessary to sustain this economic activity. As background, the economic factors driving the demand for freight movement and the elements of the transportation system that are meeting this demand are described below.

**A. Key Characteristics of Freight Mobility in Montana**

There are four basic types of freight movement in Montana: exports (from the state to other states and internationally), imports (to the state from other states and nations), movement from origins to destinations within Montana, and shipments that "bridge" (pass through) the state.

**1. Freight Exports from Montana**

The export of goods and services sustains Montana's economy. However, it is primarily the export of goods that requires freight mobility. Historically, Montana's economic well being has been derived from the exports from its "basic" industries. These exports have involved the bulk shipment of agricultural commodities (mainly grain), forest products, and natural resources, such as coal, out of the state. These basic industries require access to a freight transportation infrastructure that can support the export of bulk commodities.

The state's most significant "basic" industry is agriculture (Bureau of Business and Economic Research, 1994 Economic Outlook Seminar). Grain accounts for a majority of agricultural activity and production, and

commodity heavily reliant upon freight rail mobility. Agriculture and the other basic industries, coal, forest products, and other natural resources, are cyclical industries. The demands they place on the transportation system fluctuate. However, over time they have required a fairly constant transportation capacity that is expected to continue over the planning horizon.

An emphasis of economic development in Montana is the growth of value-added manufacturing, using the bulk commodities produced in the state. Typically, value-added production requires more time sensitive distribution that is dependent upon good highway connections and airport access.

## **2. Freight Imports to Montana**

Bulk imports to Montana primarily include fertilizer and grain shipments from Canada, on route to other destinations. Freight shipped to Montana includes finished (consumer) goods and products, value-added semi-finished goods, parts, packages, and other miscellaneous products.

In common with the rest of the nation, Montana's service sector has experienced rapid growth over the past two decades. Income from health care services and business services in Montana grew over 50 percent between 1987 and 1992 alone. To the extent to which these services are bought by residents from outside Montana or bring income into the state, they contribute to economic growth. The delivery of these services requires the importation of freight, mainly in the form of smaller high value time sensitive packages that use air transportation for delivery.

## **3. Freight Circulating within Montana**

The third type of freight movement involves shipments circulating within Montana. This includes the circulation of goods in urban areas and between urban and outlying rural areas. When urban areas become congested by passenger vehicles, freight circulation is affected. Similarly in rural areas with steep terrain, limited passing opportunities, and increasing traffic volumes, overall congestion can impact freight mobility.

#### **4. Freight Passing through or "Bridging" Montana**

Largely because of its geographic location and small population, Montana is a bridge state for interstate truck shipments. This occurs due to interstate commerce shipping goods between the Midwest and the Northwest United States. For over a century, people and goods have travelled from east to west across Montana and the highway and rail systems are oriented to serving these demands. With the passage of the North American Free Trade Agreement there is the expectation that Montana will also serve as a bridge state for international trade between the United States and Canada to the north. However, it is not clear how large the volume of traffic will be because, like the United States, the Canadian transportation system is strongly oriented east-west.

#### **B. Freight Mobility in Montana**

Demands for freight mobility in Montana are met by highway, rail, and air transportation modes or a combination of modes. When more than one mode is used to ship freight from origin to destination, the movement is considered intermodal shipment.

The following briefly describes how the demands for freight mobility discussed above are currently met in Montana. They are described in greater detail as part of TranPlan 21's technical work.

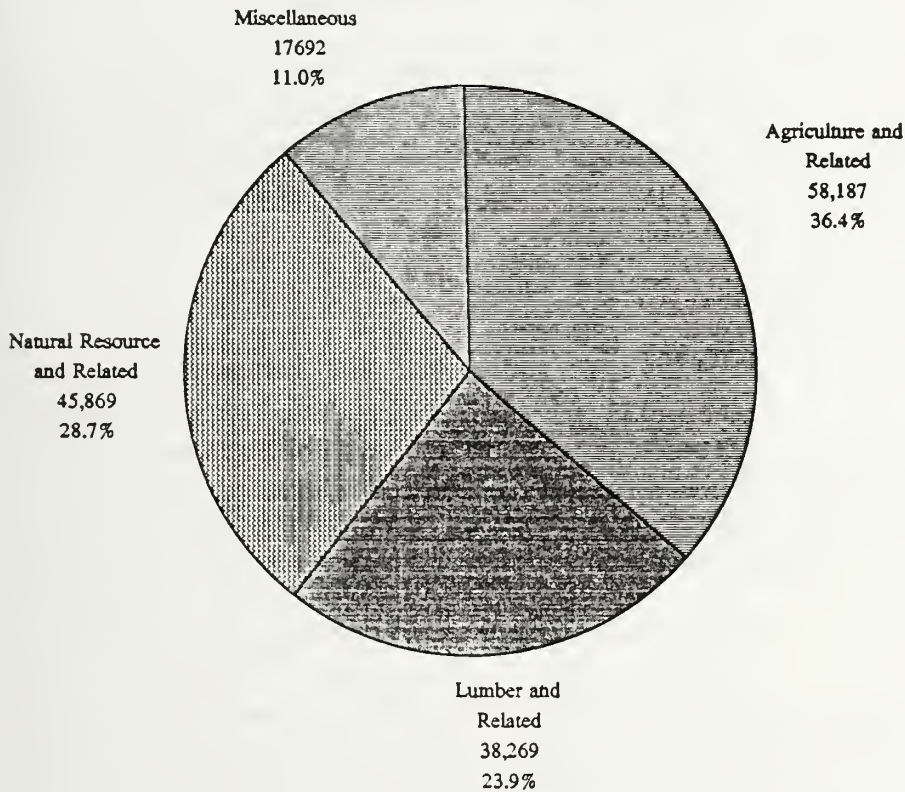
##### **1. Freight Rail**

Montana's basic industries and hence the state's economy are very dependent upon rail transportation. In the case of agriculture, 92 percent of Montana's wheat crop is shipped out-of-state by rail (Montana Agricultural Statistics Service) and all coal mined and a large portion of lumber and wood products are exported from Montana by rail. For example, in 1991 the Burlington Northern Railroad shipped 36 million tons of coal at an average of 8.3 trains per day.

Exhibit I shows the volumes of commodities shipped into and out of Montana's freight rail stations. The exhibit excludes coal shipped directly from the Powder River Basin.



**Exhibit I:**  
**1991 Montana Non-Coal Freight Rail Composition**  
(Originating and Terminating Carloads)



The commodities shown in Exhibit I are shipped to and from freight stations across the state. In 1991 there were 40 freight rail stations with 1,000 or more originating and terminating non-coal rail carloads, and a further 29 with between 500 and 999 originating and terminating carloads. The number and respective volumes at each station is indicative of the fact that even with the loss of branch lines over the past decade, the state maintains an extensive network of main lines and branch lines. This network is used primarily for exporting. Montana serves as a bridge for rail freight movements. The majority of carloads originating and terminating in Montana are outbound, in 1991, 78 percent of these carloads originated in the state.

Over the past ten years, the rail industry in Montana experienced considerable restructuring that resulted in a decrease of about 1,400 miles of track. The restructuring involved the Burlington Northern Railroad reducing the extent of its branch line network. Ownership of certain lines was transferred to short line operators such as Montana Western, Central Montana Rail and a new regional operator, Montana Rail Link. In other cases, lines were abandoned.

Despite the extensive loss of branch lines, the overall volume of rail freight (excluding coal) remained fairly constant between 1982 and 1990 at 166,000 carloads. The products that were formerly shipped on the abandoned lines are now most likely hauled by truck to the nearest freight rail access.

## 2. Intermodal Freight Rail

Intermodal freight rail in Montana involves the transfer of trailers onto flat cars, containers onto flat cars, the reload of lumber from trucks onto flat cars, and the transfer of grain from trucks to hopper cars. The vast majority of trailer on flat car and container on flat car intermodal transfers take place at the Port of Montana in Butte, the Northern Express Transportation Authority in Shelby, and at Burlington Northern intermodal terminals in Billings, Shelby, and Missoula. Grain transfers take place at hundreds of terminals. Both the Port of Montana and Northern Express Transportation Authority have experienced large increases in intermodal traffic during the past three years. Burlington Northern's facilities are also active, with approximately 900 carloads in and out each month at Billings, and 500 in and out at Shelby. In Missoula, the numbers are smaller with between 50 and 100 carloads in and out each month.

## 3. Highway Freight

The proportion of commercial traffic in the vehicle stream varies considerably around the state. The highway system is a key component of the circulation of freight in the state. The heaviest concentration of interstate and intrastate truck movements occurs along Interstate corridors. With the exception of Interstate 90 west of Billings, no corridors in the state have an average daily commercial vehicle traffic over 1,000.

Although there is no origin and destination information available for commercial vehicles, the traffic count information suggests that a large portion of the interstate traffic consists of trucks travelling across the

state. Within Montana, the commercial traffic is most heavily concentrated between the major population centers of Billings, Bozeman, Butte, Great Falls, Whitefish/Kalispell and Missoula.

**Manufactured goods.** While the vast majority of bulk commodities are shipped out-of-state by rail, highway freight plays a similar dominant role in the shipment of manufactured products out of the state and to and from regional distribution centers. Trucks serve a different market to the railroads. They move the vast majority of manufactured goods because they are able to offer door to door service and do not require large economies of scale. In 1989, 84 percent of all manufactured freight moved to and from Montana was shipped by truck (Montana Motor Carriers Association, 1994). Annually some 13 million tons of manufactured goods are moved out of the state by truck (75 percent of all outbound manufactured goods) and 17 million tons of manufactured goods are shipped into the state by truck (94 percent of total inbound freight tonnage).

**Agricultural shipments.** The motor carrier industry plays a key role in the agricultural industry for transporting livestock, feed, fertilizer and other goods to farms and ranches. In addition, trucks haul grain and livestock to elevators, processing plants, and markets.

#### 4. Air Freight

The volume of air freight handled by Montana's major commercial airports (Billings, Bozeman, Butte, Great Falls, Helena, Kalispell, and Missoula) has increased considerably in recent years. All air freight shipments are intermodal because they involve surface transportation to and from the airports. In 1993, 16,275 tons of air cargo were shipped, an increase of 18.6 percent since 1990. The vast majority, about 80 percent, of air freight is shipped into Montana with the balance exported.

## II. KEY FREIGHT MOBILITY ISSUES

Recent state and national trends have caused significant changes in Montana's freight transportation system.

These trends have resulted in:

- A major decrease in railroad track mileage, but little change in the overall volume shipped into and out of the state.



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- An increase in intermodal freight traffic in the state.
- A steady increase in the number of truck miles each year.

These trends reflect changes in the organization and delivery of transportation services by private providers as they seek the most efficient form of operation. The trends also reflect the steady increase in the number of freight-related trips in Montana and nationally.

Currently, Montana has an effective freight transportation system that provides the mobility required for exporting bulk commodities from the state, the circulation of freight within the state, and the import of time sensitive materials. The key transportation planning issues for freight mobility in Montana arise from concerns about the consequences of past trends and the desire to ensure that Montana has a transportation system that will meet current and future freight mobility needs. On the supply side, this depends upon whether Montana can expect to see a continuation of past industry trends and understand the implications of new directions in the provision of freight services. On the demand side, the key issue concerns the nature of future freight mobility needs.

Freight mobility issues were identified by Montana's citizens through public meetings across the state and focus groups involving transportation providers. The issues arising from the analysis of existing conditions and practices are described below.

### **A. Issues Raised By Citizens and Industry Representatives**

Citizens and industry representatives identified a number of planning issues concerning freight transportation in Montana. The issues are described in detail in the TranPlan 21 - Issue Identification Results report.

The general issues identified are the following:

- Concern about the loss of rail service, especially as it affects local economies.
- Desire for a balanced freight system that includes rail.
- The perceived need to promote alternatives to truck use.
- Expectation that there will be increased north/south freight movement and from Canada.
- Alarm over perceived predatory Canadian marketing.



- Recognition that the private sector plays a major role in freight mobility by rail, air, or truck.
- Concern that the Canadian trucking industry and Canadian producers are at an unfair competitive advantage because of weight exemptions between Sweetgrass and Shelby.
- Belief that the lack of direct air transportation service to Canada impacts freight mobility.
- Concern about grain car and container car shortages.

## B. Issues Arising From Existing Conditions

The following freight transportation issues arise from the evaluation of recent trends, existing conditions, and practices as part of the TranPlan 21 technical work.

- **Decline in freight rail branch lines**

The Montana State Rail Plan has documented the decline in freight rail branch lines in Montana that occurred throughout the 1980s. Restructuring in the rail industry resulted in rationalization and cost cutting measures that reduced the geographic scope of freight rail in Montana. More specifically, service was eliminated along many rail branch lines that served smaller communities. The abandonment of branch lines peaked during the early 1980s, however, the railroad industry continues to restructure. The rail industry in Montana overall appears healthy - the total volumes shipped have not declined over the past decade. It is difficult to predict the future consequences of continued restructuring for Montana, but it is reasonable to assume that it increases the prospect of a further decline in track mileage and the associated local economic impacts.

Rail industry observers believe that the Burlington Northern Railroad, who provides almost all main line service in Montana, has already realized the majority of the productivity gains that they can achieve on their branch line operations. On the supply side, the most likely opportunities for reducing costs, other than providing subsidies or tax breaks, would be if branch lines were turned over to short line operators. On the demand side, the only opportunities for branch line preservation arise from increasing revenue either through increased demand or rates.

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- **Adverse impacts on pavement preservation from increased truck volumes**

The number of ton miles hauled by heavy vehicles over Montana highways has increased steadily over the past decade. Between 1980 and 1990 alone it grew by 7.9 percent (Cost Allocation Study, Montana Department of Transportation, 1992). Historically, there has been a steady increase in the volume of truck traffic and especially the number of equivalent single axle loads (ESALs). Equivalent single axle loads provide an indication of the physical demand that the passage of a vehicle places on the roadway. These demands can be calculated for different classes of vehicles to provide a measure that is used for design purposes and also provides a good measure for monitoring the actual use of the roadway.

Montana law and regulations control the size and weight of trucks and are designed to preserve pavement surfaces. Contrary to public perception, longer vehicle combinations actually distribute the gross weight over greater lengths. This results in lower axle weights than on the statutory five axle trucks. Montana's most recent Cost Allocation Study concluded that trucks pay their "fair share" relative to basic vehicles for the construction and maintenance of Montana's highways. This suggests that increased truck traffic generates sufficient additional revenues to meet additional highway demands.

- **High potential for adverse impact on pavement conditions of secondary system and county maintained-roads from increased truck volumes**

The secondary system and county-maintained roads are built to design standards which are based upon the expectation of far lower equivalent single axle loads than on the National Highway, primary, urban, or interstate systems. Therefore, when segments of the secondary system experience significantly higher equivalent single axle loads than they were designed for, there are severe impacts on pavement conditions. There are selected examples of where this has taken place. The examples include grain shipped to elevators in Montana from Canada, and instances of the transfer of loads from the rail system to the road system. In the latter case, branch line preservation may prove a cost effective strategy for secondary system pavement preservation.

- **Effective oversize/overweight enforcement helps ensure efficient freight mobility**

The motor carrier industry has had low profit margins since the deregulation of interstate trucking. Montana's regulation of intrastate trucking was recently preempted by recent federal legislation in all areas except household goods carriers and hazardous and solid waste. This will increase the competitive environment for intrastate trucking. In this competitive environment any firm that is not in compliance with size and weight restrictions is at an unfair competitive advantage. Therefore, it is in the interest of the motor carrier industry and the efficient movement of freight to have an effective oversize/overweight enforcement program. In addition, an effective program plays a vital role in pavement preservation.

- **Conflict between passenger and freight mobility and quality-of-life goals in certain corridors**

There appears to be conflict between passenger and freight traffic on some corridors, most notably between Whitefish, Kalispell, and Missoula. In particular, the hauling of wood products between Whitefish, Kalispell, Polson, and Missoula has raised safety and quality of life concerns. In addition, on routes such as this with little access control, limited passing opportunities, and increased traffic volumes, passenger and freight mobility are in conflict.

- **Concern about international and interstate regulatory issues**

Canadian trucks travelling through Montana have raised public concern regarding highway impacts and unfair competition with Montana's agricultural producers. It is important to note that Canadian vehicles must conform to the exact weight and length requirements in Montana that the Montana Motor Carrier industry and other states' industry are obligated to meet. The only exception is a demonstration project between the Sweetgrass-Coutts border crossing and the Port of Shelby that aims to evaluate the impacts of the lack of uniformity. This system allows heavier Canadian trucks to travel approximately 35 miles into Montana before transferring or reloading to meet standard regulations (Montana State Rail Plan Update, 1993). The Montana Motor Carriers do not believe that this places Canadian truckers at an advantage because it has limited application.



## POLICY PAPER

- **Uncertainty over the extent of new freight demands arising from international trade**

There is a widespread belief throughout Montana that there will be an increase in freight movement through the state due to the North American Trade Agreement. Further, the Canadian Provinces to the north have strong economies and relatively large populations, factors that fuel the expectation of opportunities for increased trade with Canada. However, caution should be exercised in considering infrastructure improvements either to meet anticipated new freight demands or to "try and induce" north to south freight movement. At present, the nature and extent of future increased freight movements are not clear. While there will undoubtedly be increased opportunities for trade with Canada, increased freight movements to, or through, Montana as a result of the North American Trade Agreement will not be a panacea for every community's economic development ills. Historically, truck traffic has grown at a slower rate than passenger traffic. Therefore, unless high passenger vehicle growth is expected in north-south freight corridors, new demands may be met by existing capacity. This historic trend should be carefully considered as part of any route or corridor analysis.

- **Border crossing capacity constraints provide the greatest potential for adversely impacting freight mobility**

The U.S. Department of Transportation's study the "Assessment of Border Crossings and Transportation Corridors for North American Trade (T-6015 Study)" concludes that capacity constraints at border crossings will provide the greatest constraint to international freight mobility. The conclusions apply to Montana's busiest point of entry, Sweetgrass-Coutts, which has not been improved since the 1930s (Governor's Trade Advisory Council, November 1993).

There are a total of 15 crossing points between Montana and Canada; seven are on state or national routes, and only three operate on a 24-hour basis (in Raymond, Roosville, and Sweetgrass-Coutts). Any decrease in the hours of operation could adversely impact connectivity with the Canadian highway system. Similarly, at the busier crossings, increased hours of operation could improve local connectivity.



- **There is a need for increased public and governmental understanding of freight mobility**

Lack of information and understanding raises the danger of poor decision-making concerning freight mobility. Public involvement efforts in Montana revealed widespread sentiment for a modal shift of freight to rail. The Governor's Trade Advisory Council has received testimony on the importance of improving highway facilities to meet expected new freight demands arising from international trade and ensuring Montana's economy benefits from increased trade. There is strong feeling that the hauling of grain into Montana is adversely impacting pavement conditions and rail car availability. Concern about future congestion in the urban areas has not considered impacts on the local circulation of freight on the highways but focussed on passenger transportation. In all these areas, there is a weak information base from which policy-makers and the public form opinions about freight transportation needs and issues. Information concerning the impacts on performance (overall freight mobility) of different government actions is the weakest. The development of the Intermodal Management System affords the opportunity for increasing the understanding of freight mobility needs.

- **Air transportation plays a vital role in freight related mobility**

The volume of freight shipped by air in Montana is small, but air cargo is of high value. In addition, air transportation allows face-to-face contact, which is essential for commerce and hence freight mobility. The lack of direct commercial scheduled service to Canadian cities such as Calgary and Lethbridge is considered a barrier to freight mobility. However, under the "open skies" agreement between the United States and Canada, air carriers no longer require bi-national agreements for introducing north-south service.

**POLICY PAPER****III. POLICY GOALS AND ACTIONS**

This section describes the policy goals and actions adopted for addressing freight mobility issues confronting Montana.

**A. POLICY GOAL A - Ensure Efficient Highway Freight Mobility**

**Action A.1.** Monitor highway freight corridors and prioritize improvements to these corridors.

This action includes designating primary freight corridors so that investment and promotion will be targeted to ensure mobility in these corridors. These corridors will be designated by TranPlan 21 and monitored through the Intermodal Management System. Based on current traffic counts, the corridors will include all current highway routes with over 500 commercial vehicles per day. The current and forecast performance of these corridors will be monitored. When traffic congestion is forecast to impact freight mobility, actions that reduce congestion or provide alternative modes such as rail will be considered.

Level of Effort:

**Initial Year 1:** 160 staff hours. The Intermodal Management System implementation and the statewide intermodal plan have identified current and future highway freight corridors. The Intermodal Management System implementation will identify performance measures for freight mobility in these corridors.

**Annually:** 160 hours staff effort to monitor performance in highway freight corridors and identify priority improvements. It is anticipated that this action will be incorporated into ongoing Intermodal Management System maintenance.

Timing: Initiate as part of TranPlan 21 adoption

**Action A.2.** Identify and address impediments to efficient freight movements in highway freight corridors.

As part of Intermodal Management System's implementation, the MDT will monitor impediments to overall freight mobility in these corridors. The focus will be on the entire trip from origin to destination within the state. Impediments will include regulatory and procedural as well as those relating to the physical infrastructure. This action involves collecting the data required to measure

impediments to freight mobility. The level of effort necessary to implement this action will depend upon the performance measure selected. These may range from simply asking motor carriers and freight forwarders to identify impediments to efficient freight movements, to conducting an origin-to-destination survey of trucks in the highway freight corridors.

Level of Effort:

Initial Year 1: 160 staff hours to 800 staff hours, measure freight corridor performance as part of Intermodal Management System implementation.

Annually: 160 staff hours of on-going effort to collect data from which to monitor system performance. This will be undertaken as part of duties associated with maintaining the Intermodal Management System.

Timing: Initiate in 1995.

**Action A.3.** Ensure freight corridors are addressed in metropolitan planning organization and other jurisdictional transportation plans.

Montana's highway and rail transportation system passes through many different jurisdictions. While the MDT plans for development within its right of way, abutting land is subject to local, tribal, and federal planning that has direct impacts upon the transportation system. The MDT will seek to ensure that efficiency is maximized and maintained along freight corridors by coordinating its planning and programming with other units of government.

In particular, in urban areas and metropolitan planning organization plans, freight mobility needs should be considered. These plans should address the highway freight corridors and access to the freight transfer facilities identified by TranPlan 21 and the needs of the "connectors" between these facilities and the statewide corridors identified.

This action will ensure that freight mobility is addressed at the local and regional levels. Consistency between metropolitan planning organization and MDT plans will be critical because local actions determine, to a large degree, the success of plan implementation. In areas where there is no metropolitan planning organization or other local/regional plan, the MDT will work with local jurisdictions to determine the best strategies and actions available.

**POLICY PAPER**Level of Effort:

Initial Year 1: 480 staff hours to work with local jurisdictions and ensure TranPlan 21 results are incorporated into metropolitan planning organization and urban area plans

Annually: Incorporate into ongoing urban planning work

Timing: Initiate in 1995

**Action A.4.** Work with local, federal and Canadian governments to ensure Montana's border crossing needs are met.

Montana has three 24-hour points of entry, two seasonal points of entry, and other points of entry that are not open 24-hours. The Sweetgrass crossing is the most important one for the state. It is due south of Calgary and Edmonton which are major growing centers of population and industry in Canada. The crossing has experienced substantial increases in traffic, some 38 percent between 1980 and 1993 and accounts for 60 to 70 percent of exports to Canada in the Rocky Mountain Region. (United States Department of Transportation, 1993).

This action involves Montana working with federal, local, and Canadian provincial governments to ensure that border crossing needs are met. United States Customs, which has jurisdictional authority for border crossings, is developing new programs and priorities for border crossings. These include programs for increasing the level of automation to include electronic filing and reducing paper work for trucks. However, funding decisions for border improvements are made by the General Services Administration. All capital improvements over \$1.5 million must be authorized by Congress.

A key goal for Montana is to ensure that future plans do not adversely affect the number of border crossings and their hours of operation. U.S. Customs is increasingly customer-oriented, therefore this action involves coordinating with customs to ensure adequate capacity and staffing levels.

Level of Effort:

Initial Year 1: 80 hours to identify U.S. Customs issues and meet with Customs and discuss any future plans affecting Montana

Annually: 100 staff hours for coordination with other jurisdictions

Timing: Initiate in 1995



## **B. POLICY GOAL B - Ensure a Balanced Freight System Through Preservation of the Existing Rail and Air Transportation System**

**Action B.1.** Prevent the further loss of rail branch lines by working with the railroad industry to facilitate the preservation of branch lines.

The state has already experienced a significant amount of branch line abandonment. While the pace of abandonment has slowed, there is no guarantee that other branch lines in Montana will not be threatened in the future. In addition, the railroad industry continues to reorganize and restructure, as illustrated by the proposed merger between Burlington Northern Railroad and the Atchison Topeka and Santa Fe Railroad.

When branch lines are abandoned, they are usually in poor condition because of deferred maintenance. This is because there is no reason to continue to invest in the facility if it will be closed in the near term. This action involves the state, through the MDT acting as a facilitator responsible for bringing together the main line and the short line operators, to identify lines that might be abandoned by the main line operator. The goal is to facilitate the transfer of the branch lines to operators with lower cost structures, before there is a backlog of deferred maintenance. This action will help to retain branch lines that could be operated by short line and regional operators at no cost to the public.

The success of this action depends upon participation by the railroad providers and could only result in the preservation of branch lines with sufficient traffic to generate revenues that will cover the lower cost structure of short line operators.

### Level of Effort:

Initial Year 1: 320 staff hours. Additional hours if branch lines are being transferred

Annually: 320 staff hours

Timing: Initiate in 1996

**Action B.2.** Identify and address priority grade separation needs at busy railroad crossings.

Montana has numerous grade crossings throughout the state. This action identifies priority grade separation needs. Conflicts between vehicular and rail traffic will be reduced to promote safety and reduce delays. Determining priorities for reducing conflicts between the two transportation modes will be based upon safety

**POLICY PAPER**

and performance improvements. Grade separation improvements will be unrealistic goals for many communities because of the high costs that arise from the realignment of existing traffic. In these cases, urban area plans should identify other strategies for reducing conflict. Grade separation for safety purposes can be funded through the safety program in ISTEA.

Level of Effort:

Initial Year 1: Depends upon projects funded

Annually: Depends upon projects funded

Timing: Initiate in 1995

**Action B.3.** Retain existing rights of way in rail corridors.

Past rail branch line abandonments often resulted in loss of rights-of-way. To counteract this trend, the MDT will actively pursue the retention of railroad rights-of-way. This will prove beneficial to the MDT because rail lines often parallel roads and highways that might need expansion in the future. Similarly, it is important to maintain transportation options that might demand reactivation of the rail branch lines at some future time. There is also interest in the reuse of railroad rights of way for bicycle and recreational uses.

Level of Effort:

Initial Year 1: Depends upon right of way acquisition costs

Annually: Would require legislative action to develop funding source

Timing: Initiate in 1995

**Action B.4.** Work with airport operators to maintain, preserve and improve level of commercial air freight service.

The provision of air freight service is largely a product of private market forces. The cities receiving Essential Air Service passenger subsidies have subsidized freight service. This action involves the MDT seeking to minimize any future air freight service reductions. By soliciting input from airport operators and air freight carriers, the MDT will improve its understanding of the industry's needs especially where it relates to surface transportation access. This information will be collected on an annual basis as part of the intermodal management system and addressed in future statewide air transportation plan updates.

Level of Effort:

Initial Year 1: 120 staff hours to collect information and document

Annually: 80 staff hours

Timing: Initiate in 1995

### **C. POLICY GOAL C - Improve Intermodal Connectivity by Increasing the use of Intermodal Freight Facilities**

Montana has well established facilities for the intermodal transfer of trailers and containers onto flatcars. These include the Port of Montana and the Northern Express Transportation Authority facilities as well as those operated by Burlington Northern. Industry representatives believe that there is adequate trailer on flat car and container on flat car intermodal capacity in Montana for the 1990s. There is concern that the provision of additional capacity would result in an over supply that would be to the detriment of intermodal facility operators. Therefore, policy actions do not identify state roles in the provision of additional trailer on flat car and container on flat car facilities. However, the Intermodal Management System will be used to monitor capacity. There is considerable interest in the intermodal transfer of wood products and grain from truck to rail at points much closer to their production. Actions for encouraging the use of intermodal facilities are discussed below.

**Action C.1.** Encourage the use of, and improve the performance of, existing intermodal terminals with open access to enable efficient transfers between modes.

This action involves encouraging the use of and improving the performance of existing intermodal facilities. Trailer on flat car and container on flat car terminals are included as facilities of statewide importance in the transportation plan. The routes connecting these facilities to the highway corridors are also included.

In pursuing intermodalism, the Intermodal Management System will identify any deficiencies in these connectors, their impact on freight transportation, and help to identify any project needs. In implementing the action the MDT will ensure that any intermodal hubs receiving public support allow open access.

**POLICY PAPER**Level of Effort:

Initial Year 1: 480 staff hours to determine need for improvements on intermodal connectors

Annually: To be determined, would include project costs

Timing: Initiate in 1995

**Action C.2.** Encourage the use of existing truck/rail reload facilities and work with private industry in the development of new facilities with open access.

This action encourages the use of existing truck to rail reload facilities and the development of new facilities. The objective of this action is to encourage the transfer of grain, lumber products and other bulk commodities from truck to rail as early as possible. If successful, this will increase the utilization of branch lines and reduce the impacts of truck traffic on pavement conditions.

Level of Effort:

Initial Year 1: 480 staff hours

Annually: 320 staff hours

Timing: To 1995

**Action C.3.** Involve shippers and private sector providers on a periodic basis to improve the MDT's understanding of freight needs.

Freight transportation is provided and used by private industry. To better understand existing and emerging freight trends and needs, this action obtains input directly from freight transportation providers, operators, and customers. This will provide a feasible means of understanding the freight industry's needs and provide input for project prioritization.

Level of Effort:

Initial Year 1: 120 hours

Annually: 120 hours. This could be incorporated into the ongoing Intermodal Management System work

Timing: Initiate in 1995



**Action C.4.** Include freight access as a component of statewide airport system planning.

Intermodalism extends beyond rail and truck freight. High value air freight requires intermodal considerations. This action addresses surface transportation access to airports as part of Montana's statewide airport system planning.

Level of Effort:

Initial Year 1: To be determined

Annually: To be determined

Timing: Incorporate as part of future updates to the Montana State Aviation System Plan

**Action C.5.** Ensure that the MDT has in-house modal expertise to address freight issues associated with Interstate Commerce Commission requirements.

This action ensures that the MDT has the modal expertise to address shippers' issues concerning interstate and international transport. Interstate Commerce Commission regulations and policies are complex and Montana's producers frequently have issues that need addressing with in-house expertise. The MDT will be able to ensure rapid response to outside requests for assistance. Recent examples of the need for additional expertise have been in assessing the following areas: the rail car supply situation, the sale of Canadian grain in Montana, rate equities, abandonment impacts and the Burlington Northern merger.

Level of Effort:

Initial Year 1: Between one-half and one full time employee

Annually: Between one-half and one full time employee

Timing: To be determined

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## IV. POLICY GOALS AND ACTIONS NOT ADOPTED

The following lists the policy goals and actions that were not adopted by the TranPlan 21 Steering Committee and the reason.

**Action.** Ensure minimum level of service "C" or better in highway freight corridors

**Reason:** *It is not appropriate to establish level of service goals solely for highway freight corridors.*

This action ensures ensuring that there is an adequate level of service on highway freight corridors. Maintaining a minimum level of service C will reduce delays to freight from congestion. The action addresses current deficiencies and takes actions in anticipation of future level of service degradation in highway freight corridors. This action will require the implementation of transportation system management and improvements necessary to ensure level of service C or better. The action is multimodal, for example, where there is forecast corridor level rural congestion, use of rail will be promoted. The action will result in directing freight related improvements to the corridors currently used most heavily. This reflects current demands and forecasts based upon future population and employment growth. The action establishes level of service goals for freight in the urban areas. If heavy trucks are making large contributions to level of service degradation, as will be the case in rural areas, then the viability of rail will be assessed.

Level of Effort:

Initial Year 1: To be determined

Annually: Involves identifying backlog of current needs and calculating future costs

Timing: After corridors are identified by the plan

**Action.** Take no action to preserve branchlines

**Reason:** *It is in the state's interest to have a balanced multimodal freight system.*

This action requires no state action with respect to branch line abandonment. The action reflects the position that private sector decision-making will result in the transportation system that provides the most efficient freight mobility options for Montana and that government should therefore take no action.

**Action.** Provide financial support for the maintenance of threatened branch lines based upon strict criteria.

*Reason: The state should not be involved in financing rail. There would be great danger of investing public money where there is no market demand for rail.*

This action involves the state establishing criteria for funding threatened branch lines. These criteria will include an analysis to determine the public benefits and costs of the support and contrast these to the costs of closure. This will include an assessment of the impacts of branch line closures on pavement conditions, safety, economic development and other variables. A more restrictive program under this action would limit financial support for infrastructure improvements that would increase the performance of the line and hence its use and in this way contribute to long term viability. Branch line improvements are expensive. Costs can range between \$200,000 and \$750,000 per mile.

Although the funding mechanism needs to be determined, there are two approaches that could be taken: the state directly funding the infrastructure improvement or second, establishing a state guaranteed revolving loan fund for branch line operators to finance any large maintenance needs. Under the Federal Local Rail Freight Assistance program, the state currently has a revolving loan program, however, there has been little participation to date by the branch line operators.

Level of Effort:

Initial Year 1: 320 to identify operators who want to participate

Annually: 480 staff hours, plus improvement costs

Timing: Initiate in 1996

**Action.** Purchase the rights of way, maintain the track, and lease the use of branch lines threatened with closure to a private operator.

*Reason: The state should not be involved in financing rail. There would be great danger of investing public money where there is no market demand for rail.*

This action involves a high level of state intervention, although it does not mean that the State of Montana will own and operate the branch line. Rather it means that Montana will take over the ownership of the right of way, be responsible for any improvements, and be responsible for maintaining the infrastructure. Railroad companies will then pay to use the facility. There is state law in place that authorizes this type of action. The law was used when the Central Montana Railroad and the Rarus Railroad were established.

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The cost of implementing this action will vary from branch line to branch line and will depend upon the current conditions of the track, maintenance needs, and user demand. The ultimate cost to the public sector will be the difference between maintenance costs and the user fees. Prior to taking this step, a feasibility study will be required on a case by case basis. In evaluating the feasibility of multimodal projects, the benefits of keeping truck traffic off the roads will be considered, in terms of pavement preservation and safety.

Level of Effort:

Initial Year 1: Minimal

Annually: Involves funding any feasibility studies, cost of purchase to develop developed

Timing: Initiate in 1996

**Action.** Improve the performance of Montana's freight rail system.

*Reason: The state should not be involved in financing rail. There would be great danger of investing public money where there is no market demand for rail.*

The condition of track, speed restrictions, the absence of grade separations, and other factors all affect the performance of the freight rail system in Montana. This action involves the state working with the railroad industry to improve the performance of the freight rail system in Montana. The purpose will be to ensure that rail traffic does not shift to truck and in this way help maintain a balanced multimodal system. The assumption is that if rail performance is improved then the competitive position of rail with respect to trucking will be enhanced.

**Action.** Fund improvements that will make significant increases in freight rail performance in key freight corridors.

*Reason: The state should not be involved in financing rail. There would be great danger of investing public money where there is no market demand for rail.*

The Intermodal Management System will provide a mechanism for systematically monitoring the performance of the Montana freight system. The action will provide a mechanism for state action to fund improvements that enhance the performance of the rail system. The improvements will be identified as those that have the biggest impact on the overall efficiency of freight movement and in achieving Montana's multimodal objectives.



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There are a number of examples that illustrate the types of improvements that enhance system performance. For example, the Union Pacific line south from Butte (Silver-Bow) to Pocatello currently has no signalization. However, there are no mechanisms currently available for funding these types of improvements. The Local Rail Freight Assistance loan program can only be used to make low interest loans available for improvements on light density branch lines.

Level of Effort:

Initial Year 1: 640 staff hours

Annually: 480 staff hours

Timing: Initiate in 1996

**Action.** Determine the feasibility of state provision of rail cars.

*Reason: State provision of railcars will not solve the problem. The railroads would substitute state cars for theirs and there would be no net increase.*

Rail car shortages are a recurring problem in Montana that most severely affects the agricultural industry. This action will involve determining the feasibility of state ownership of rail cars. Once purchased, the rail cars will be released into the system and the income from their use used to pay back the cost of purchase.

Level of Effort:

Initial Year 1: 160 staff hours to evaluate feasibility, 480 staff hours to develop program, establish funding source (possibly a loan), and purchase railcars (if feasible)

Annually: 80 staff hours to monitor success

Timing: Initiate feasibility study in 1995

## V. REFERENCES

Assessment of Border Crossings and Transportation Corridors for North American Trade. United States Department of Transportation, 1993. (6015 Study)

Governor's Trade Advisory Council: Summary of Proceedings. Great Falls, Montana. 11/16/1993.

**DISCUSSION DRAFT**

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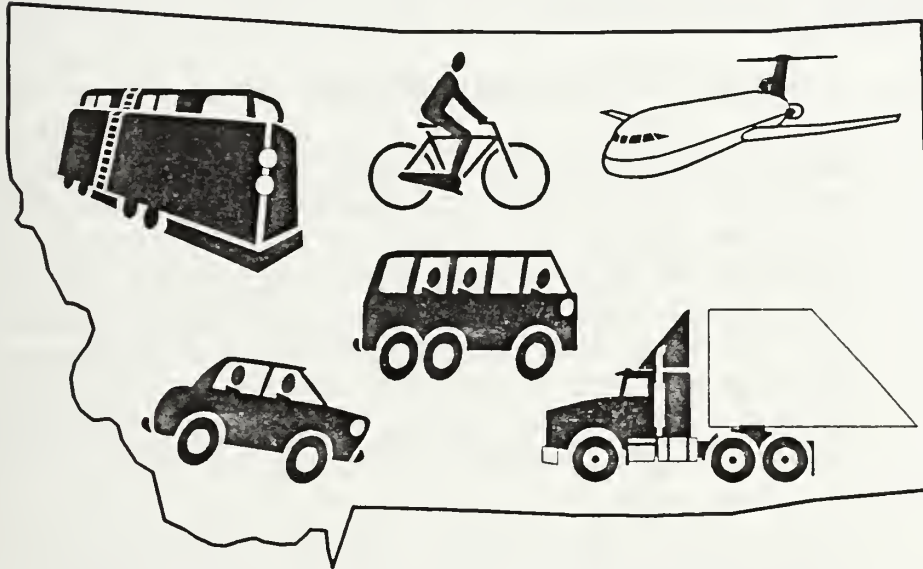
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# Montana Department of Transportation

## TranPlan 21



### Roadway System Performance

### Policy Paper

December 12, 1994

prepared by

DYE MANAGEMENT GROUP, INC.

in conjunction with

WOOLPERT

**POLICY PAPER****I. BACKGROUND - ROADWAY SYSTEM PERFORMANCE (PRESERVATION) IN MONTANA**

This policy paper describes the current performance of Montana's highway system and the trends affecting the future performance of the system. Key issues concerning the current and future performance of the highway system are described and strategies for addressing them are outlined.

**A. The Extent of Montana's Highway System**

Montana is one of the most rural states in the nation, covering a large sparsely populated land area. The highway system plays a central role in allowing the state to function politically, economically, and socially. Three-quarters of all miles travelled in Montana are driven outside of the state's urban areas. Montana's highway system connects small communities to regional service centers and to major cities to one another and the rest of the nation. As Governor Racicot stated, "highways are the life-line and life-blood of [Montana's] economy". In addition, Montana's highway system plays a key role in the National Highway System by providing important interstate and international transportation corridors.

The extent of Montana's highway system is summarized in Exhibit 1, on the following page. There are 12,807 center-line miles and 28,422 lane miles, on the state's highway system.

The transportation system represents the largest single capital investment in the state of Montana. The challenge for Montana is to identify the most effective strategies for preserving and maintaining this system. Using existing resources most cost effectively is a key objective for the MDT because the amount of funding per mile of roadway in Montana will always be relatively low, compared to other states.

Although Montana recently increased the fuel tax to 27 cents per gallon, it is important to remember that Montana still ranks 45th in the nation in revenue dollars per mile of road. This is because Montana's population ranks 44th in the nation when measured per mile of road. The limited population to support the highway infrastructure restricts the potential for generating new funds. For example, each new penny of fuel tax in Montana generates only \$5.3 million in total revenues. These revenues are matched by federal funds on most projects. A particular challenge for Montana is funding maintenance that is ineligible for federal funds.



**Exhibit 1**  
**Montana's Highway System Miles**  
**by State Funding Categories**

System Classification	Center Line Miles	Total Lane Miles
National Highway System	3,859	10,344
Primary Highway System	2,836	5,793
Secondary Highway System	4,631	9,244
Urban Highway System	345	769
State Highways (Orphan Plant)	1,136	2,272
Total on State Systems	12,807	28,422
<i>Off System Urban</i>	<i>1,826</i>	
<i>Off System County</i>	<i>56,099</i>	

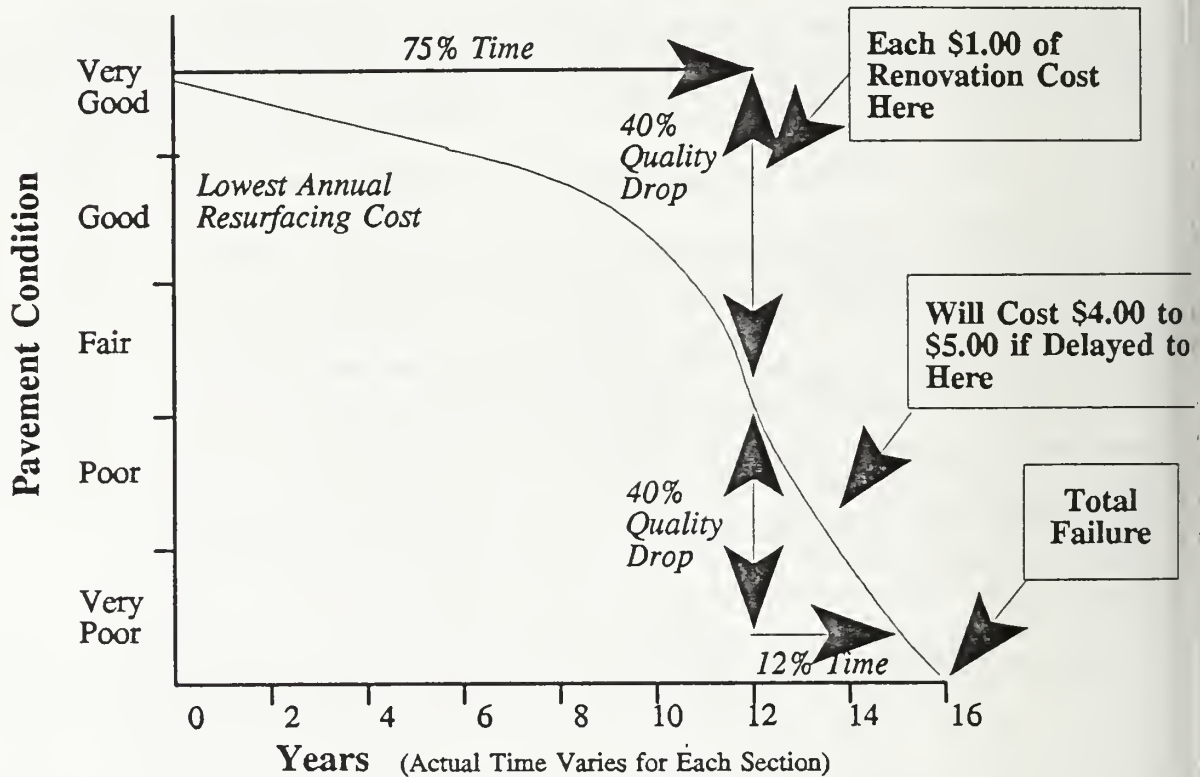
Although a low population generally translates to low traffic volumes, deterioration of the highway infrastructure is not proportionately reduced. One of the factors influencing pavement deterioration is certainly heavy truck traffic, but time and weather, such as Montana's severe freeze-thaw conditions, also play a major role. These factors are also the primary causes for deterioration of bridges, culverts, signs, guardrail, etc. Montana's highway users pay for preserving and maintaining this extensive system. It is important to note that normal system maintenance costs are not eligible for federal cost sharing.

The importance of investing in system preservation is increased by the fact that delayed preservation escalates in cost exponentially. This is demonstrated by Exhibit 2 which shows that deferred pavement preservation results in large increases in cost.

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## Exhibit 2

### Cost of Delaying Preservation



Source: "The Hole Story", APWA, 1983

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## B. Current Roadway Conditions

With a few notable exceptions, there is adequate capacity to meet current travel demands. Maintaining and preserving the current performance level of the system is an important planning and management challenge for the state.

Montana has seen pavement condition improvements over the past ten years however there are many miles with poor structural conditions and a short remaining life. The development of the MDT's pavement management system will provide much needed information about the extent of pavement preservation needs.

## 1. Pavement Conditions

As reported in the *1992 State of the Primary Pavement Report*, the average condition of the primary and interstate pavements appears to be good. Pavement conditions are summarized in Exhibit 3 below.

### Exhibit 3 Average Serviceability of Statewide System

Average Pavement Serviceability Index					
	1983/84	1985/86	1988	1990	1992
Primary System	2.6	2.8	3.0	3.4	3.3
Interstate System	3.6	3.8	3.7	3.7	3.6

This measure describes the serviceability of the pavement but does not provide information about the remaining life. A recent surface treatment that does not structurally strengthen the road could mask base weakness. Therefore, it is important to be very careful when using Pavement Serviceability Indices.

Pavement conditions are measured by a Present Serviceability Index that ranges from range 0 to 5. A measure between 2 and 3 is "fair", and between 3 and 4 is "good". The above data indicates that the average pavement serviceability index for the primary system pavements increased from the mid-"fair" range in 1983 to the mid-"good" range in 1992. Another notable sign is that the inventory of lane miles with a very poor or poor condition has been reduced on both systems to almost zero. (However, pavements are constantly deteriorating and many miles may be in danger of falling into these conditions.) The 1983-1992 improvements can be partially attributed to increases in the motor fuel tax. The tax increases allowed Montana to support a state-funded construction program that paid for cost-effective pavement preservation projects not eligible to receive federal funds. Another reason for the improvement is that the state concentrated on improved preservation efforts over this time period. For comparative purposes, the national average condition for pavements on the arterial systems is somewhat below the "good" range.



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Over the past ten years the average condition of interstate pavements remained essentially constant in the middle of the "good" range. Again, this partly reflects the level of investment the state made between 1983 and 1992, the state's efforts in preservation, and also the fact that federal funding for the interstate system remained approximately constant throughout the period. This condition of Montana's interstates is slightly better than the national average for the interstate system.

Data regarding the average condition of secondary system pavements is not available for this time period. These data will become available with the implementation of the MDT's pavement management system together with information about the remaining life of the pavement. There are 4,631 center line miles on the secondary system, of which the MDT is responsible for maintaining less than 500 miles. Classification on the secondary system merely makes the roadway eligible for improvements determined by the counties responsible for the federal funds suballocated for their use. Secondary system pavement preservation needs are in part addressed by the MDT's Save Our Secondaries program. There is continued county concern that there is not adequate funding to meet preservation needs on the secondary system. This could be true, with acute problems in certain counties experiencing heavy road use particularly by trucks. However, this conclusion can not be validated until the data are available. It should be emphasized that one consequence of deferred maintenance on the part of counties will be increased preservation needs eligible for federal funding.

The Pavement Management System, which is being implemented in coordination with the state's metropolitan planning organizations and counties, will provide improved information about pavement needs on the urban system.

## **2. Bridge Conditions**

Bridge conditions appear to be better than the national average, with only 9.3 percent structurally deficient compared to the national average of 20 percent. Exhibit 4, shows the number of and condition of Montana's bridges. About 20.4 percent are functionally obsolete, which is slightly above the national average of 15 percent. This is based upon federal standards, which might be considered excessive for some of the state's low volume roads. Most bridges in the western part of the state are in need of retrofitting to bring them into compliance with code provisions for earthquake loading resistance. The Bridge Bureau has been developing methods for retrofitting and is programming the retrofit based upon





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highest volume-service flow ratios, however, only a small proportion of these roads are at or above 80 percent of their capacity.

### Exhibit 5 Volume-Service Flow Ratios on Montana's Highways

Highway	Mileage by Volume - Surface Flow Ratio						
	< 0.21	0.21 - 0.40	0.41 - 0.70	0.71 - 0.79	0.80 - 0.95	> 0.95	Total
Urban							
Interstate	24	26					50
Other Principal Arterials	25	74	43	4	7	11	164
Minor Arterials	100	40	48	9	7	9	213
Rural							
Interstate	849	292					1,141
Other Principal Arterials	1,666	392	47				2,105
Minor Arterials	3,040	223	50				3,313

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics, 1992 (FMWA-PL-93-023), 1993.

### C. Future Conditions

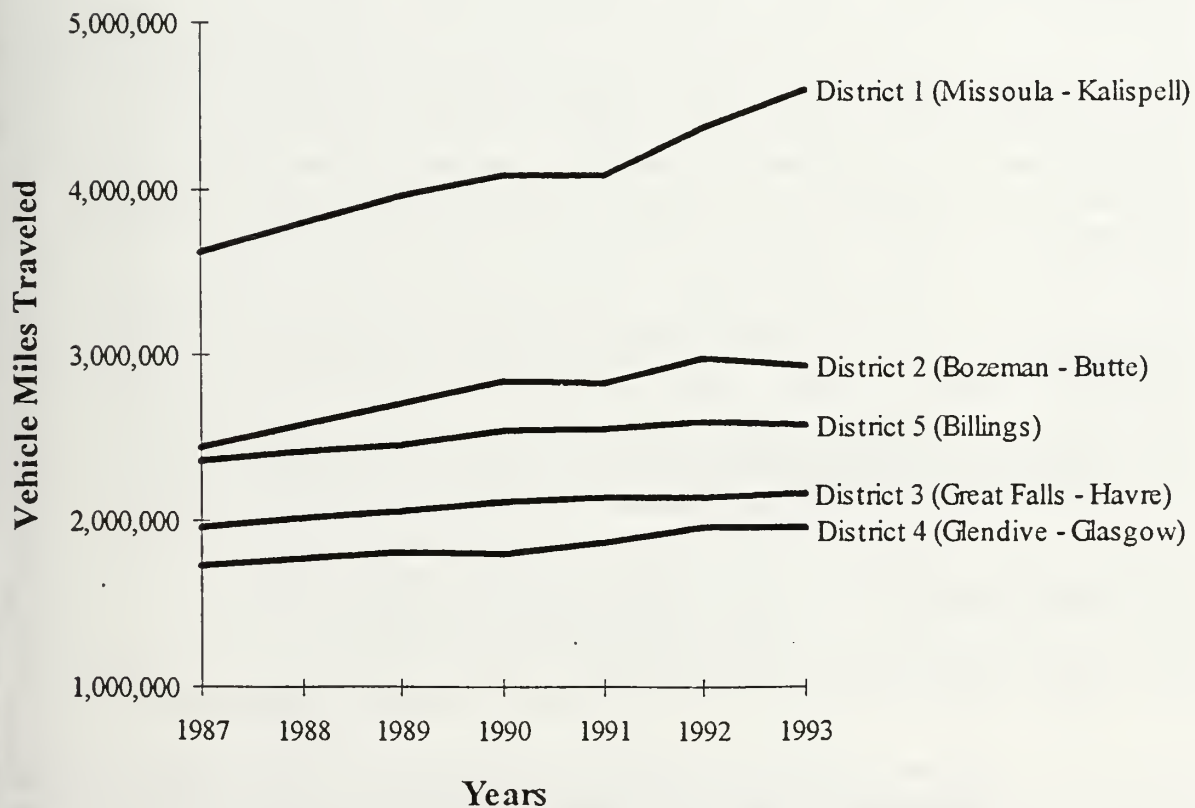
As indicated above, Montana has a highway system that is in good condition and meets today's demands from its users. However, the challenge for Montana is in ensuring that the system can meet the demands of the twenty-first century.

Sustaining existing performance levels to meet tomorrow's demands will be a challenge. Montana's population, economy and associated travel demands are changing. There has been a large growth in vehicle miles travelled in Montana over the past decade. This growth has varied considerably between the different regions of the state. These growth rates are particularly pronounced in the faster growing areas of the state. The growth rates are due to the overall increase in population and employment in the state, increased visits to the state for tourism,

a growth in bridge traffic through the state, and an overall growth in the number of miles driven by each Montanan. Historic rates of growth are shown in Exhibits 6 and 7. Daily vehicle miles traveled in the Missoula-Kalispell area (District 1) have grown at almost three times the rate in eastern Montana.

Forecasts have been developed for traffic demand over the next twenty years as part of TranPlan 21 technical work. These forecasts indicate a slower but continued, rate of traffic growth on Montana's highways. The forecast indicates that over the next twenty years western Montana's roads could be carrying between half and three-quarters as much traffic again. This growth will likely be most concentrated in the counties adjacent to urban areas.

**Exhibit 6**  
**Growth in Daily Vehicle Miles Traveled in Montana**  
**1987 - 1993**



**Exhibit 7**  
**Vehicle Miles Traveled In Montana by District**  
**1987 - 1993**  
 (Millions)

District	1987	1988	1989	1990	1991	1992	1993	Average Annual Growth Rate (Percent)
District 1 (Missoula - Kalispell)	3.621	N/A	3.96	4.08	4.07	4.37	4.60	3.9
District 2 (Bozeman - Butte)	2.44	N/A	2.69	2.82	2.81	2.96	2.93	2.9
District 3 (Great Falls - Havre)	1.96	N/A	2.06	2.11	2.14	2.14	2.17	1.5
District 4 (Glendive - Glasgow)	1.74	N/A	1.81	1.81	1.87	1.97	1.97	1.9
District 5 (Billings)	2.35	N/A	2.46	2.54	2.55	2.59	2.58	1.4
<b>TOTAL</b>	<b>12.11</b>	<b>N/A</b>	<b>12.99</b>	<b>13.35</b>	<b>13.44</b>	<b>14.02</b>	<b>14.24</b>	<b>2.5</b>

Source: MDT Highway Information System

Note: N/A = information not available

## II. KEY ROADWAY PERFORMANCE ISSUES

### A. Issues Raised By Citizens and Industry Representatives

Citizens and industry representatives identified a number of issues concerning the current and future performance of Montana's highway system. The issues are described in detail in the TranPlan 21 - Issue Identification Results report.



The overall public sentiment is that Montana has an excellent highway system given the state's size, population density, and resources. Public sentiment is that the highway system is basically complete and that the MDT should focus its efforts on preservation and maintenance.

The general issues identified were as follows:

- **Recognition that improvements will be needed in response to growth.** There is recognition that traffic growth is creating the need for improvements in certain corridors and at some intersections. Most frequently noted was Highway 93 between Kalispell and Missoula. However there is no consensus about the extent to which Montanans wish to choose between adding capacity and managing with a lower level of service.
- **Concern about improvements on low volume roads.** Concern was expressed about the inability to fund improvements on low volume roads, especially those that are gravel.
- **Need for access management.** There is a recognition of the benefits to system performance of better access management and control in major corridors. However, participants cautioned against a statewide approach that does not take regional differences into consideration. (This issue area and related land use planning issues are addressed in the Access Management and Land Use Planning Policy Paper).
- **Prevention of billboard proliferation.** There was a substantial amount of concern about billboard proliferation, especially along scenic corridors.
- **Desire for the highway system to meet the needs of tourism and other growth industries.** The important role that highways play in Montana's growing tourist industry, and in interstate and international commerce was acknowledged. There is a belief that it is the MDT's responsibility to address this through planning and project development. (This issue area is addressed in the Supporting Economic Development through the Transportation System Policy Paper and the Freight Mobility Policy Paper).
- **Need for a consistent approach to improvements.** Citizens and industry representatives believe that the decision process concerning the nature and funding for improvements is not consistent.

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- **Expressed concern for the impact on pavement conditions parallel to abandoned rail lines.** There is acute concern about the impacts on pavement conditions on the secondary system and some county roads from rail branch line abandonment. (This issue is addressed in the Freight Mobility Policy Paper).

## **B. Issues Arising from Existing Pavement Conditions and Preservation Practices**

The following pavement preservation issues arise from the evaluation of recent trends, existing conditions, and practices as part of the TranPlan 21 technical work.

### **1. Current Pavement Preservation Strategies**

The MDT is currently developing a pavement management system that will enable a thorough analysis of pavement preservation strategies.

Current strategies are summarized by Montana highway systems 1999 Needs Study. Minimum needs strategies indicate up to a 10 year cycle for seal and cover and a 20 year cycle for overlay. The full needs strategies indicate up to a 7 year cycle for seal and cover and a 14 year cycle for overlay.

The improved average pavement condition on the primary system and the decreased inventory of fair and poor condition pavements also indicate heavy emphasis on reconstruction over the past 10 years. This was entirely appropriate given the condition of the pavements at the beginning of that period.

The data in Exhibit 8 shows the length of time it will take to work on the entire system based upon actual levels of expenditures over the past five years.

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**EXHIBIT 8****Five Year Average - Interval in Years to Work on Entire System  
1990 - 1994**

	Interstate 1191 Total Miles	Primary System 5504 Total Miles	Secondary System 4631 Total Miles	Urban 345 total Miles	State System (Orphan Plant) 1136 Total Miles
<b>Any Type Of</b>					
Pavement Construction/ Reconstruction	8.5	28.5	Data Not Available	Data Not Available	250
Pavement Maintenance	5.6	6.45	Data Not Available	Data Not Available	10
Other Activities	N/A	N/A	N/A	N/A	N/A

**Maintenance activities are defined as:**

- Thin lift overlay ( $\leq .15$ )
- Recycle/relay asphalt and PCCP
- PCCP surfacing
- Seal and cover/O.G.F.C.

**Construction activities are defined as:**

- New construction
- Reconstruction
- Widening and overlay
- Overlay (more than a thin lift)

**Other activities are defined as:**

- Gravel surfacing
- Structures
- Safety improvements
- Railroad crossings
- Intersection improvements
- Roadside maintenance
- Drainage
- Signs and striping maintenance
- Plowing and deicing
- Other miscellaneous

Source: Derived from MDT actual expenditure data.

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According to the data, the average interval to undertake some level of pavement maintenance on the Interstate and primary system is 5.6 and 14 years. In general, the pavement preservation on the interstate system is happening on a cycle that will continue to ensure good pavement conditions. However, based on the past 5 years of projects, the average length of cycles for some type of pavement construction/reconstruction work on the primary system has been 28.5 years. It is not easily possible to calculate the figure for the secondary system. This would require collecting information on county projects, as well.

There have been significant efforts over the last 10 years to increase and improve preservation efforts. New and more permanent materials and repair methods have been employed. Maintenance management has been implemented and continues to improve with the development of the new Pavement Management System and Bridge Management System which integrate life-cycle costing into the preservation decision-making system. In the last biennium, \$6.5 million was added to highway maintenance materials investments.

## **2. Low Volume Roads on the Secondary System**

Almost all the roadways on the secondary system are functionally classified as rural major collectors. Many of these routes have low traffic volumes. There is concern that if traffic volumes are used as a sole criterion to trigger preservation projects then deferred maintenance will increase the costs of reconstruction.

## **3. Low Volume Gravel Roads**

There is considerable pressure to pave low volume gravel roads on the secondary system from their users. In many cases such routes have average daily traffic under 250 vehicles. Given the resources available, it is simply not cost effective to pave these roads. Even with available resources, once these roads are paved, the counties cannot afford to maintain them.

## **C. Existing Modernization and Construction Goals Practices**

The MDT's Geometric Design Standards (approved December 4, 1992) established new design standards for highway reconstruction and construction. These standards guide the modernization and addition of capacity that occurs as part of reconstruction. The changes lower the design goals on non-National



Highway System primary routes based on an evaluation of future use and funding constraints.

However, many roads are in need of work to meet Montana's design goals. They can not all be improved immediately and many will not be funded over the next twenty years. Therefore, to use funds effectively two key issues arise:

- Need to consider establishing minimum tolerable conditions to trigger improvements with precisely defined criteria.
- Need to consider tying capacity improvements to future traffic volumes once existing unmet needs are addressed.

### **1. Need to Consider Establishing Minimum Tolerable Conditions to Trigger Improvements**

The MDT's geometric design standards recognize that it is not cost effective to spend money evenly over all 12,000 miles on the state's system. This could be taken a step further by establishing minimum tolerable conditions for the primary, secondary, and urban systems. Minimum tolerable conditions should not be confused with the MDT's geometric design standards which would be higher than minimum tolerable conditions in order to prevent highways declining to minimally tolerable conditions. Minimum tolerable conditions can be used to trigger needed improvements, if conditions deteriorate below the relevant standard, then an improvement program is triggered. The improvement is then undertaken to the design standards that reflect the optimum condition of the roadways in each system.

Minimum tolerable conditions can be established for construction (modernization) and reconstruction, bridge structures, and pavement preservation purposes. These standards for construction and reconstruction can be based upon general roadway standards that reduce the free flow of traffic. These can include narrow lanes and shoulders, steep and rolling terrain, sharp curves, truck and recreational vehicle volumes, and general traffic volumes. These conditions will differ depending upon the functional role or system. For example, congestion may be more tolerable on the urban system than the interstate or primary system.

Minimum tolerable conditions for triggering pavement preservation needs would be the same as the performance measures in the pavement management system. Different ratings can be applied as conditions, depending upon the system. The pavement management system being

developed by the MDT should be able to identify a cycle of pavement preservation improvements that will provide the most cost effective program of improvements for pavement preservation that factors in forecast pavement use, weather, Equivalent Single Axle Loads, and other variables into the evaluation of pavement deterioration. In this way the management system will identify pavement preservation needs, based upon assigned minimum tolerable conditions.

## **2. Need to Consider Tying Capacity Improvements to Future Traffic Volumes**

Capacity additions not only require the initial investment in construction but also add to all future maintenance costs by adding to the inventory of lane miles that must be maintained. To avoid building added capacity where there will not be additional traffic to justify it there is a need to tie capacity improvements to expected traffic growth and modernization needs.

As discussed above, minimum tolerable conditions could be used as a basis for triggering capacity improvements. Among the factors that could be included are whether or not the segment or corridor is forecast to exceed a certain volume within the next twenty years. The Congestion Management System is developing a series of performance measures that could be used to track this type of information.

In addition, there are other factors such as safety that are extremely important in considering capacity related improvements. In fact, many projects that result in increased capacity are primarily intended to modernize unsafe outdated roads rather than add capacity.

## **3. Need to Set Informed Priorities for Roadway System Performance**

Roadway needs have always exceeded available funding. As discussed earlier, a key challenge for the MDT is to optimize the allocation of available funds to ensure that the roadway system's performance meets the priorities of the system users. Montana's highway users have competing and conflicting priorities. No matter how well the MDT manages the highway program the performance of the system over the next twenty years will depend upon the ability and willingness of Montanans to pay for it.

To set informed priorities it is important that Montanans understand the financial constraints affecting the preservation and development of the system. There are frequent demands for improvements that, it is argued, will facilitate economic development, however, if funded they would come at the cost of other improvements. Many jurisdictions and transportation interests have their own priorities and agendas for projects that they would like funded. These can not all be met and they do not necessarily reflect what is in the general interest of the state.

Establishing overall priorities for road system needs is critical. Implicit in the types of funding decisions that have been made in the past five years is that preservation is a high priority. The resulting benefits have been seen in terms of improved pavement conditions. However, as a guide to program development and project selection it will be valuable to establish a framework for ranking priorities.

This framework could distinguish between preservation of the current system, safety improvements, capacity expansion and other types of facility upgrades.

#### 4. Current Methods and Materials

There has been increased attention over the past ten years toward improving preservation and maintenance methods and materials. More permanent materials are being utilized, for example, the use of plant mix asphalt paving instead of cold mix repairs. Corrosion resistant culvert materials are being utilized in areas that have highly corrosive soils.

In the eastern part of the state, obtaining good aggregates for either new construction or maintenance is a difficult proposition that adds to the cost for both routine maintenance and construction. Haul distances for the good aggregate are longer, which results in increased costs and can create scheduling problems.

Recently, a Maintenance Review Section was established to analyze available data and make decisions. This should help to further improve methods and materials.

**POLICY PAPER****III. POLICY GOALS AND ACTIONS**

This section outlines the policy goals and actions for addressing roadway system performance issues adopted by the TranPlan 21 Steering Committee.

**A. POLICY GOAL A. - Establish Explicit Priorities for Roadway Improvements**

This policy goal establishes explicit framework for prioritizing projects and developing the State Transportation Improvement Program. The policy's intent is not to use all funds solely for preservation projects but to establish the MDT overall priorities. In implementing TranPlan 21, the programming process will establish a balance between funding these different priorities for roadway improvements. However, this cannot be accomplished until the safety, pavement and other management systems are in place to provide the analytical basis for establishing funding goals for the different priorities. The following lists the overall roadway priorities established by TranPlan 21:

**First Priority - Preservation of Montana's Existing Highway System which Includes Reconstruction.**

This prioritizes preservation because roads that are not properly maintained and preserved will result in:

- Large increases in repair costs.
- Operating cost increases for road users.
- Increases in accident rates.
- Increases in environmental damage.
- Increased travel delays.
- Increased tort liability.

**Second Priority - Safety Improvements.**

In addition to the safety improvements associated with the system preservation and reconstruction, other improvements are needed to improve safety. These improvements include minor widening, elimination of dangerous curves, providing passing lanes, improving dangerous intersections, and certain bridges.

**Third Priority - Capacity Expansion.**

Capacity expansion is needed in certain corridors to reduce congestion and maintain levels of service. The capacity of some roads will need to be expanded over the next twenty years.



**Fourth Priority - Other Improvements.**

This includes upgrades, such as paving low volume gravel roads.

**Action A.1.** Establish a process for ensuring project selection reflects policy and planning goals.

This action involves establishing a process that will ensure that the MDT's expenditures reflect policy and planning goals. It will involve establishing a task force involving headquarters staff and district engineers to develop criteria and a process that will tie project selection decisions to planning and policy goals. There will be a need to coordinate state and metropolitan planning organization and small urban area planning goals in developing the project selection process and criteria.

Level of Effort:

Initial Year 1: 1,200 staff hours

Annually: Include in STIP process

Timing: 1995 to 1996

**B. POLICY GOAL B. - Systematically Modernize Montana's Highway Infrastructure**

**Action B.1.** Continue to use the existing Geometric Design Standards for preserving and developing the highway system.

The Geometric Design Standards used by the MDT were developed as recently as 1991. This was the result of a major effort and circumstances have not changed to warrant a major review of the Standards. The existing design standards provide the most effective basis for planning the long term management and development of the system. The recently adopted Design Standards involved scaling back many previous design goals.

Level of Effort:

Initial Year 1: No increase in effort

Annually: No increase in effort

Timing: Currently implemented

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**Action B.2.** Establish criteria (goals and standards) to be used to determine reconstruction needs and whether to add capacity.

Many of Montana's highways will continue to have relatively low traffic volumes. These criteria will be used to avoid "overbuilding" in corridors where current and forecast volumes do not warrant capacity expansion. These criteria will include many of the different elements that are part of the sufficiency rating.

Applying such criteria will help the MDT to rely on technical data and expert judgment to justify widening rather than less dependable factors. In some cases widening will be justifiable based upon safety alone or safety combined with traffic volumes. The ISTE management systems will provide the data required to measure these goals and criteria. The specific criteria can be used in the project selection process.

Level of Effort:

Initial Year 1: 800 hours implement in conjunction with Action A.1

Annually: No increase in effort incorporated into management system and program development work

Timing: 1995 to 1996

**Action B.3.** Establish and implement proactive right-of-way preservation in corridors forecast to have capacity constraints over the next twenty years.

TranPlan 21 has forecast growth in traffic volumes over the next twenty years. As part of the congestion management system development, these forecasts are being used to anticipate future congestion and level of service degradation in Montana's major corridors. This action involves ensuring that active right-of-way preservation is targeted in corridors that are likely to have the greatest need of capacity related improvements over the next twenty years.

**Action B.4.** Inform local planning and development officials of the state's desire to preserve these corridors and the extent of local responsibilities in this regard.

This action involves working with local jurisdictions to ensure that their decisions do not impact right-of-way preservation.

Level of Effort:

Initial Year 1: 480 staff hours

Annually: 320 staff hours

Timing: Initiate in 1995

**Action B.5.** Encourage local jurisdictions to address right-of-way preservation in local land use plans and any access management programs.

The TranPlan 21 Access Management and Land Use Planning Policy Paper noted increased local interest in land use planning and outlined the benefits for system performance of access management. This action will involve ensuring that local land use planning address right-of-way corridor preservation.

Level of Effort:

Initial Year 1: 640 staff hours

Annually: 480 staff hours

Timing: Initiate in 1996

**Action B.6.** Establish and fund a program, if necessary, for acquisition of right-of-way on highways that are currently congested and TranPlan 21 forecasts indicate will be congested in the next twenty years.

While it is difficult to set aside funding for right-of-way acquisition, particularly in the face of critical needs for preserving the physical infrastructure, the life cycle cost will be less because the right-of-way will be acquired at lower cost than it would be after development is allowed to occur. In addition, acquisition costs in high growth areas will increase dramatically.

This action involves allocating funds as needed in the first year of plan implementation to fund right-of-way acquisition in corridors with forecast capacity needs. The budget will then be adjusted, based upon experienced need and known acquisitions.

Level of Effort:

Initial Year 1: 500 staff hours, \$250,000 budget for program

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Annually: 500 staff hours. Program allocation to be adjusted based on first year's experience

Timing: Initiate in 1997

**Action B.7.** Use the Pavement, Maintenance, and Bridge Management Systems to coordinate maintenance work with other construction work.

This action will coordinate maintenance work with other construction work so that a section of road is not worked on twice within a short period of time. While this sounds simple, it is not always accomplished. The action will involve coordinating the strategies from the management systems with programmed improvements. Where possible, maintenance work will be combined with improvement projects without causing delay. In other cases the maintenance schedule will be adjusted.

Level of Effort:

Initial Year 1: 500 staff hours

Annually: 500 staff hours

Timing: Initiate in 1996

**C. POLICY GOAL C. Enhance the Multimodal Role of the Roadway System.**

This policy goal involves ensuring that highway modernization accounts for the multimodal role of the roadways in Montana. Other actions that advance this role are included in the Public Transportation and the Bicycle and Pedestrian Facilities Policy Papers.

**Action C.1.** Include consideration of public transit needs in updates to the Geometric Design Standards.

The technical analysis undertaken as part of TranPlan 21 indicates that public transportation is not currently likely to change the need for capacity improvements. In some parts of the state, population growth and the related increase in travel demand will result in needs for capacity improvements over the next twenty years. Increased population will increase the demand for transit and automobile use and will create more potential for modal trade offs. This action establishes options for including consideration of how to accommodate public transportation most effectively on Montana's highways as demand for it increases.



and how to provide infrastructure that supports modal trade offs and an increase in ride sharing.

**Action C.2.** Use the Congestion Management System to identify corridors where public transportation could reduce the need for capacity improvements.

TranPlan 21 technical work found that there is little current potential to make modal tradeoffs between public transportation and automobile demand. However, as population grows in western Montana and in urban areas, the potential for modal trade offs will increase. This action involves using the Congestion Management System to identify where there will be future potential for modal tradeoffs and highlights these corridors and facilities in future updates to the Geometric Design Standards. This will ensure that where transit is present, it is accommodated by the highway system so as to provide safe and efficient service for the transit customers as well as other users of the highway system.

Level of Effort:

Initial Year 1:        Include as part of Congestion Management System maintenance and reporting responsibilities

Annually:             Include as part of Congestion Management System maintenance and reporting responsibilities

Timing:             Initiate in 1996

**Action C.3.** Identify criteria and locations for transit supportive design.

This action involves anticipating future transit use of the highway system in the criteria and guidelines for project development. This will require working with transit system operators to identify any high volume locations where bus turn-outs or other transit supportive design features are justified. This will also include locating park-and-ride or park-and-pool lots to help reduce vehicular volumes on routes that are forecast to carry high peak hour single occupant vehicle passenger volumes.

Level of Effort:

Initial Year 1:        800 staff hours to develop agreed criteria and identify locations

Annually:             200 Additional staff hours

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Timing:

Initiate in 1996

**D. POLICY GOAL D - Identify and Deploy Cost-Effective Intelligent Transportation Systems Applications To Improve Safety and Capacity**

In considering this policy goal, it is important to note that TranPlan 21 is a twenty year plan. In this time frame intelligent transportation system applications will most likely be developed, tested, and deployed nationally. The MDT is already participating in their use for interstate commercial vehicles.

While many of the intelligent transportation system solutions may appear futuristic, there is a high expectation that their application will reduce physical construction costs. Many new technologies for vehicles, roadways, and public transportation operations will become available over the next five to ten years. This policy will direct the MDT to prepare to take full advantage of the efficiencies to be gained from these technologies as cost-effective methods to get the most out of the existing system.

**Action D.1.** Develop the MDT's intelligent transportation system plan as the basis for evaluating, and where cost effective, deploying advanced vehicle technologies in lieu of highway system improvements to improve safety and capacity.

This action involves the MDT working with Montana State University to develop an intelligent transportation system strategic and tactical plan. Ongoing work will involve monitoring the development of intelligent transportation system applications and their applicability to Montana. The federal government has placed emphasis on identifying rural intelligent transportation system applications. This action will involve pursuing opportunities for Montana's participation in federal programs and demonstration projects.

Implementation of the action involves establishing an advanced technologies task force within the MDT to monitor and identify the applicability of intelligent transportation system applications in Montana. Task force members will represent different functional areas in the department and be responsible for tracking technological developments that are applicable to their function. This will support the MDT's current collaboration with Montana State University and the Western Transportation Institute.

Among the intelligent transportation system applications to be considered are run-off-the-road collision avoidance systems and the use of drowsiness alarms. In the future, on low volume roads that have safety problems due to inadequate width,

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it may be substantially less costly to purchase run-off-the-road collision avoidance systems for all regular users than to widen the road. The national Intelligent Transportation System Strategic Plan includes land and road departure warning in its middle term (10 year timeframe) operational testing program and warning systems for distant obstacles, land departure, lane change and merge, and roadway conditions in its middle term deployment program. Deployment of these systems is slow as much due to legal reasons as due to technical reasons. Automobile manufacturers do not relish the thought of a shift of legal responsibilities for collisions from the driver to the manufacturer.

The plan will explore deployment of commercial vehicle applications to prevent congestion and safety problems at weigh stations. The MDT is participating in initiatives to use intelligent transportation system applications to reduce congestion at weigh stations and to improve their general efficiency. These applications will likely allow automated credentials verification and preclearance of weigh stations. This application will reduce administrative time, increase the system's effectiveness, improve safety and weight enforcement.

Level of Effort:

Initial Year 1: 1,200 staff hours to prepare plan

Annually: 400 staff hours

Timing: Initiate in 1996

**Action D.2.** Encourage the metropolitan planning organization areas to include consideration of intelligent transportation systems in their long range plans.

It is unlikely that Montana's urban areas will reach the levels of population in which system performance can be improved through these types of systems. However, this action will encourage metropolitan planning organizations to consider intelligent transportation systems over their long range planning horizon.

**E. POLICY GOAL E - Preserve highway pavement conditions at existing or higher levels on the interstate and primary system. Establish goals for improving secondary system pavement conditions.**

As documented earlier, virtually the entire interstate and primary system has pavement conditions that are fair or better. However, there is no information from which to evaluate pavement conditions on the secondary system. This policy



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goal involves actions for preserving and improving the existing conditions on the interstate and primary system and establishing goals for the secondary system using the pavement management system.

**Action E.1.** Ensure that the Pavement Management System is used as a planning program development, and engineering tool.

The Pavement Management System is an extremely powerful tool to help the MDT make better decisions. The Pavement Management System that is being developed by the MDT will utilize life-cycle costing to evaluate various forms of investment in the pavement infrastructure. The Pavement Management System will enable MDT to make very informed decisions regarding maintenance and preservation investments. It will then provide timely feedback on the effectiveness of those decisions.

It is expected that the Pavement Management System will show that an increase in level of investment in early and frequent routine maintenance is desirable in order to reduce life cycle costs and increase life cycle benefits. This assumption is consistent with engineering research and previous statewide studies. The subject of preservation needs and practice will need to be revisited after the Pavement Management System is on line and is providing reports.

The most important issue associated with the management system is ensuring that it provides information that is useful for planning and program development.

**Action E.2.** Ensure use of Pavement Management System is institutionalized

This action involves ensuring that all relevant MDT divisions and districts learn about Pavement Management System capabilities and establish procedures for using its output.

Level of Effort:

Initial Year 1: A further 1000 hours of staff time from various divisions to participate in system development and analysis of data.

Annually: A further 1000 hours of staff time from various divisions to participate in system development and analysis of data.

Timing: Immediately

**Action E.3.** Develop ways to evaluate techniques and materials through the management system to ensure long-term performance.



This action involves further use of the Pavement Management System.

Level of Effort:

Initial Year 1: 480 staff hours

Annually: 480 staff hours

Timing: 1997

**Action E.4.** Use the Pavement Management System to define strategies and funding levels that will maintain existing performance.

Existing pavement conditions will be used as a performance goal for constraining the pavement management system that is currently being developed by the MDT. This action will use existing conditions as the pavement performance goal against which the optimal combination of pavement strategies will be identified. These strategies will then be used to guide the types of projects selected and the balance between construction and preservation-related projects.

Level of Effort:

Initial Year 1: Incorporate as part of staff responsibilities

Annually: Incorporate as part of staff responsibilities

Timing: Immediately

**Action E.5.** Monitor and determine the impacts of the North American Free Trade Agreement upon Montana's transportation facilities..

There is an expectation of increased shipments between Canada through Montana to the southwest U.S. and beyond. Because Alberta permits heavier loads than Montana, there is concern that these heavier loads will cause increased deterioration and affect the safety of Montana's bridges should they be widely permitted within the state. This action will continue existing research to determine the impacts upon Montana's bridges and highways of increased commercial vehicle traffic from Canada.

**Action E.6.** Regularly update the cost allocation study to ensure equity in user fees and include analysis of secondary system use.

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This action involves updating the cost allocation study to ensure equitable fees for highway use. Future updates will address secondary system use and any additional impact on pavement and bridge conditions arising from North American Free Trade Agreement-related traffic are financed by this traffic.

Level of Effort:

Initial Year 1: 800 total staff hours

Annually: To be determined

Timing: Initiate 1997 to 1998

**Action E.7.** Do not increase the MDT's maintenance responsibilities

There are tendencies for many groups to view the highway budget based on its raw size without regard to needs and conclude that there is money available for other purposes. There is continuous pressure from local governments to shift their maintenance responsibilities to the state. One of the reasons is that local tax bases are weak and not dedicated to transportation. Property taxes are the primary source of funding for local governments to maintain roads in addition to most of their other governmental functions including schools. Therefore, they essentially have a freeze on available funds, and many of their other programs are dramatically escalating in cost.

Level of Effort:

Initial Year 1: Incorporate as part of existing staff responsibilities

Annually: Incorporate as part of existing staff responsibilities

Timing: Immediately

**Action E.8.** Use the Pavement Management System to assist local jurisdictions to understand their preservation needs.

The MDT is working with counties to collect data as part of Pavement Management System implementation. Disseminating the results will help counties make better preservation decisions in selecting secondary system projects and spending their funds off system. However there is concern that increased data collection burdens may limit county and metropolitan planning organization participation.

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Level of Effort:

Initial Year 1: Incorporate as part of Pavement Management System responsibilities

Annually: Incorporate as part of Pavement Management System responsibilities

Timing: Immediately

**Action E.9.** Establish maintenance standards and goals to complement the Geometric Design Standards.

This action establishes goals and criteria that will be used to trigger maintenance improvements. Include pavement conditions, accident history and other safety considerations as factors in targeting maintenance resources.

Level of Effort:

Initial Year 1: 640 staff hours

Annually: 320 staff hours

Timing: 1995

**Action E.10.** Prioritize system preservation and maintenance

Although data from the Pavement Management System are not available, the current maintenance cycles described earlier indicate the likely need for increased maintenance. When funding levels are inadequate, pavement conditions deteriorate to fair or poor conditions that are intolerable to the travelling public, requiring rehabilitation or reconstruction to return them to tolerable conditions. Great public pressure to repair the fair and poor pavements results in a large allocation of resources to rehabilitation or reconstruction. Because total resources are limited, this allocation results in decreased allocations in other areas, such as routine maintenance. Life cycle costing analyses show that deferred routine maintenance results in even more pavements deteriorating to the fair or poor conditions, and the cycle repeats.

**Action E.11.** Use the Bridge Management System as a planning, program development, and engineering tool.

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The Bridge Management System is a valuable tool. The Bridge Management System that is being developed by the department that will utilize life-cycle costing to evaluate various forms of investment in the bridge infrastructure. The Bridge Management System will enable the MDT to make very informed decisions regarding the maintenance and replacement needs of the state's bridges. It will then provide timely feedback on the effectiveness of those decisions.

This action involves using the Bridge Management System to determine preservation needs and to define the most cost effective strategies.

Level of Effort:

Initial Year 1: To be determined

Annually: To be determined

Timing: To be determined

**Action E.12.** Provide and disseminate transportation system preservation and maintenance information.

This action involves developing an ongoing communications program to educate and inform the members of the state legislature and the public regarding system maintenance achievements, activities, and needs. Frequently there is public pressure to make investments that are not cost effective, in simple terms the argument is "do the worst first." This is not the most cost effective practice.

A continuous communications program that educates the public and transportation stakeholders about needs as well as improvements and successes of the transportation program will help build credibility and cooperation for cost effective strategies.

The public is the primary customer of the transportation system. They deserve to be informed about the program, and when properly informed, have a better understanding of the problems involved.

Implementing the action will involve including summary reporting in design of management systems to present a clear picture of overall needs and disseminating information that reports accomplishment. The action involves preparing facts sheets reporting on system conditions and achievements. Oriented to transportation stakeholders, the legislature and the public, this will increase understanding about transportation system management.



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Level of Effort:

Initial Year 1: 640 staff hours

Annually: 480 staff hours

Timing: Initiate 1996

**F. POLICY GOAL F - Improve Construction and Maintenance Techniques and Materials**

This policy goal is designed to continue to improve construction and maintenance techniques and materials to optimize return on expenditures and improve the service life of the highway infrastructure.

Improved techniques will provide a higher quality product, which is essential in realizing the full benefits of early routine maintenance procedures.

**Action F.1.** Continually review maintenance operational procedures for efficiency and effectiveness improvements.

Level of Effort:

Initial Year 1: 1000 hours of staff time

Annually: To be determined

Timing: 1996

This action involves:

- Continuing with the implementation of the Maintenance Review Section and use to review procedures.
- Prioritizing major maintenance operations and assigning a team to review each operation for efficiency and quality of the operation. Where quality and efficiency conflict, choose quality.
- Establishing processes within maintenance operations to continually solicit all maintenance employees' ideas for improving quality and efficiency.
- Developing a listing of laws, regulations, and agreements that adversely impact the ability to improve operations; prioritize the list as to the most

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important and most feasible to modify; and begin efforts to obtain favorable modification to the law, regulation, or agreement.

- Continuing to contract and/or privatize where feasible.

**Action F.2.** Review procedures for testing and accepting maintenance materials to ensure quality materials.

This action will ensure that high quality maintenance materials are used. Just procedures are important for the success of the routine maintenance activities materials are critical for quality results and will be given just as much attention in maintenance as in new construction.

Level of Effort:

Initial Year 1: 480 hours of staff time.

Annually: To be determined

Timing: 1996

**Action F.3.** Utilize the Maintenance Review Section and the Construction Review Section, through the Materials Bureau, to further review the problem of poor aggregates and availability throughout the state.

Level of Effort:

Initial Year 1: Include as part of ongoing work.

Annually: Include as part of ongoing work.

Timing:

**Action F.4.** Review department procedures for testing and accepting new materials and procedures developed through research and development.

This action will continue to ensure the use of good materials and procedures and hence quality maintenance. Using the most up-to-date methods and materials as soon as they are available and proven will also greatly impact this effort.

**Action F.5.** Continue ongoing communications processes with contractors and materials suppliers to improve results.

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This action ensures that the MDT will continue to meet regularly with contractors and suppliers to discuss the service delivery process, new methods, and materials.

Level of Effort:

Initial Year 1: 64 hours of staff time

Annually: 64 hours of staff time

Timing: 1995

**Action F.6.** Continue efforts to review bidding procedures to determine if there are any impediments to implementation of new methods or materials.

Sometimes bidding procedures, such as requirements for alternate bidding and requirements to include more than one supplier, can get in the way of utilizing effective materials. This action ensures that the MDT will continue to explore contract warranties.

**Action F.7.** Establish a task force including contractors and suppliers to review the bidding situation.

Level of Effort:

Initial Year 1: 320 hours of staff time.

Annually: Not applicable

Timing: To be determined

**IV. POLICY GOALS AND ACTIONS NOT ADOPTED**

The following policy options were not adopted.

**Action.** Modify the geometric design standards by increasing the mileage in the "maintain existing level of development category".

*Reason: The current geometric design standards were developed as recently as 1991. Circumstances have not changed that warrant another review.*

This action will reduce the mileage that will be subject to capacity improvements and other modernization as part of construction and reconstruction.

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**Action.** Modify the geometric design standards by changing the geometric standards themselves.

*Reason: The current geometric design standards were developed as recently as 1991. Circumstances have not changed that warrant another review.*

The standards will be modified to provide a variable scale of improvement geometric based upon traffic volumes and other indicators. Alternative design standards that will be considered include, as a possible cost effective solution, two lane facilities with properly designed passing lanes, particularly in high truck or recreational vehicle volume situations combined with hilly terrain.

**Action** Continue to maintain pavements at existing funding levels and with existing mix of routine maintenance, rehabilitation, and reconstruction.

*Reason: It is premature to establish planning goals in this area. The Pavement Management System will generate the information required to do this in 1995.*

This action will maintain the existing balance between maintenance, preservation-related rehabilitation and reconstruction, and construction.

**Action.** Maintain pavements at existing funding levels but with a change in strategies to decrease rehabilitation and reconstruction and increase routine maintenance.

*Reason: It is premature to establish planning goals in this area. The Pavement Management System will generate the information required to do this in 1995.*

This action undertakes more preservation-related projects as opposed to construction. This action prejudices the expectation that the Pavement Management System results will confirm the research literature that early and frequent routine maintenance will result in lower life cycle costs and higher user benefits to the public in the form of smoother pavements that cause less vehicle wear and tear. Therefore, prudent life cycle cost investment for Montana will require increasing investment in early and frequent routine maintenance.

At existing funding levels this requires less funding of rehabilitation/reconstruction projects. This strategy may be unpopular with the public, but eventually will provide higher overall pavement conditions, even though there might be some miles of severely deteriorated pavement.

**Action.** Contract with a university or private research/testing firm to evaluate the problem of the shortage of good aggregates and cost effective ways to obtain the best aggregates in each area of the state.



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*Reason: The MDT has already identified solutions to these problems.*

Level of Effort:

Initial Year 1: 400 hours of staff time and \$200,000 for research contract.

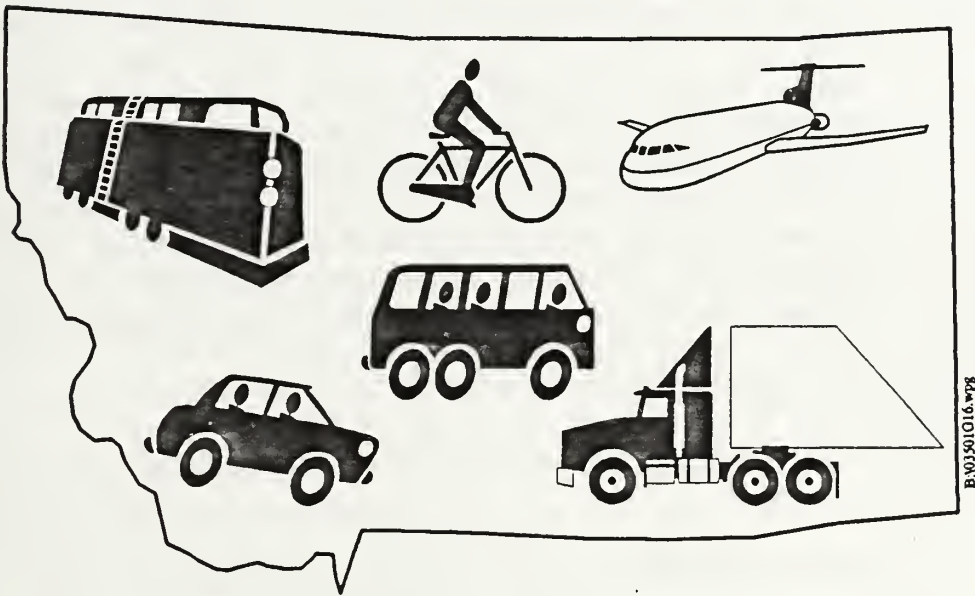
Annually: Not applicable.

Timing: 1996



# Montana Department of Transportation

## TranPlan 21



Access Management and Land Use Planning

Policy Paper

December 12, 1994

prepared by

**DYE MANAGEMENT GROUP, INC.**

in conjunction

Cambridge Systematics

## **I. ACCESS MANAGEMENT, LAND USE PLANNING AND TRANSPORTATION IN MONTANA - BACKGROUND**

This policy paper addresses access management on the Montana highway system and the broader issue of coordinating land use and transportation in Montana. For both areas the paper describes current practices, the major issues, and the policy goals and actions adopted through TranPlan 21 for addressing the issues.

### **A. Access Management on the Montana Highway System**

Access management is the strict control of the design and operation of all driveways and public street connections onto highways. Regulations address elements such as driveway spacing, intersection and traffic signal spacing, denial of access requests, and geometric design standards. These standards should reflect differences in urban and rural areas, as well as in the hierarchy of functional classes, allowing greater degree of access on lower volume and speed routes, while being more strict on higher volume and speed routes.

#### **1. Overview**

Management or control of vehicular access to the system of state highways and arterial roadways is a practice that has gained increased attention in recent years as a means of preserving and enhancing system performance. Several western states, including Colorado and Oregon, have adopted more comprehensive access management programs that go well beyond the traditional treatment of access as simply a right-of-way issue. This movement is consistent with the overall direction of transportation planning in the ISTEA era, during which as much attention will be paid to highway maintenance as to capital construction. States are looking to access management as an essential tool for preservation of the functional integrity and hierarchy of the existing highway system.

#### **2. Current Practices in Montana**

The need for access management in Montana has been raised directly and indirectly in the issue identification process. Summary results of the key highway issues note that the system is basically complete, and that the focus should shift to preservation and maintenance. In addition, it has been noted by MDT staff that enhancement of access management standards, and more rigorous enforcement of those standards, is desirable



from the Department's standpoint of maintaining safety and system performance.

Access management in Montana is not defined or implemented to the same degree as it is in several states with more aggressive, proactive programs. In general, the State has exhibited less tendency towards planning, regulation and growth management than other states. This is particularly true in locations outside of the major cities, where the state highways often serve as the principal route through town. In those locations, relatively easy and under-regulated access to the network of state highways seems to be an assumed right accorded to property owners.

As recently as April 1992, the Highway Commission adopted an Access Management Plan developed by MDT staff. That document did not represent a significant departure from previous policy. Rather, it appears mainly to have clarified the process by which an existing access control regulation can be modified to allow access at points that were not granted at the time the access rights were originally acquired from the property. The current plan does not contain any specific criteria or thresholds for applying access management policies or techniques. This lack of clear policy guidance, coupled with the Commission's inconsistent attitude towards access management over the years, has contributed to the current situation.

### 3. Access Management Strategies and Mechanisms

The specific methods and criteria for determining how much access to provide, and how to physically provide or limit access, are the elements of an access management strategy. Successful access management strategies include:

- A classification system, defining the "access class" for each facility in the state system.
- Standards for determining what level of controls appropriate for a given area and facility type.
- Criteria which define the preferred characteristics within an access class; examples include criteria for minimum intersection and driveway spacing, installation of barrier medians, location of median breaks, turn prohibitions at intersections and driveways, use of frontage roads, traffic signal spacing, etc.

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- Procedures for handling requested variances from the standards.

Additional components might include a permit or fee system, guidelines for "grandfathering" existing access, and administrative responsibilities.

Other than the traffic engineering tools noted above, other techniques that a state may use to effect access management include the following:

- **Acquisition of Access Rights.** The state has the power to purchase access rights or restrictions. These may be used to control the location and number of access points to a given parcel, as well as to limit changes in the use of an access point if that change would generate additional demand on the arterial roadway.
- **Statutory Access Control.** The state may declare a roadway as a controlled access facility, typically in the interest of public safety, convenience and welfare. This is most readily accomplished in corridors where development pressures have not yet surged, and where the existing level of access is minimal. Criteria or thresholds should be established to determine when a route may be declared limited or controlled access.
- **Subdivision Regulations.** The state has no authority to review subdivision plans. This is undertaken at the local level. This strategy is most suited for local government to ensure for, example, that the development has adequate internal circulation, setbacks, and not direct access onto highways from individual lots.
- **Driveway Permit System.** The state (as well as lower levels of government) have the authority to require a permit for construction of a private driveway onto a public road. This may also be used to prevent further access from the same parcel in the future (restrictive covenant.)
- **Official Mapping.** The state and most levels of government, by officially mapping a future transportation corridor or improvement, have the authority to retain full access control over the planned facility. Limitations may apply to Montana's ability to officially map a state highway improvement until alignment studies and environmental analysis has been completed, however.
- **Corridor Planning.** Multi-jurisdictional planning efforts, authorized by state and federal statutes, may be used to develop

corridor plans. The plans could include specifics as to how corridor preservation and access management will be achieved, and the type and scale of development which will be encouraged through specific access locations, frontage roads, and other physical techniques. MDT's corridor preservation report, "The Preservation of Right-of-Way for Transportation Corridors", provides a good starting point for this type of approach in Montana.

- **Land Use Planning and Zoning.** This is predominantly the domain of local government. However, MDT can control access to state facilities, and thus exerts some influence. The state, through a technical and policy support role, can impact the development of land use plans and zoning ordinances in a way that favors access management. The potential value of a supportive role, rather than a regulatory one, should not be dismissed. The most damage, or the most benefit, can be had during early stages of development pressure, before a locality has the presence, expertise or resources to define access management strategies. By providing support such as model ordinances, site design and access guidelines, and even review of applications, the state could affect important development decisions in critical "formative" years of a corridor's urbanization.

Many of the potential strategies noted above for access management may also be applied to corridor preservation efforts, for example:

- **Land Purchase.** Many techniques are available to help ensure that land is available for additional right-of-way when and if needed. These include outright purchase, purchase of easements, and land-banking. Disadvantages include the difficulty of predicting with accuracy the final alignment of a transportation project, and the inefficiency/unpopularity of committing scarce funds for projects with such a long term payback.
- **Official Mapping.** As noted above, official mapping of future transportation corridors may be necessary to effectively prevent development from taking place within the corridor. To avoid "taking" battles, and other property rights challenges, some care must be exercised in the timing and duration of such techniques.
- **Setback Standards.** These must be used with care to reserve land for future expansion of existing facilities, perhaps including



frontage roads. Setback standards that promote public safety and welfare (for example, safety buffers of sight clearance) do not require compensation of land owners. Conversely, setbacks for the sole purpose of reserving land for future roadway widening will generally result in a "taking" action requiring compensation.

- **Dedications.** Dedications are typically requested at the state level only when a development has access onto a state facility. Local government may use this technique liberally in exacting land for necessary improvements. A recent ruling of the U.S. Supreme Court places more stringent burden of proof upon government in establishing proportionality and nexus between the impact and the dedication, however.

## B. Current Land Use Planning Authority in Montana

Montana has no enabling legislation that provides for protection of land use at the state level. Authority for land use planning is at the local level. Local jurisdictions have the authority to address land use planning through: a comprehensive plan, sub-division laws, and zoning regulations. The Montana Department of Commerce, Community Technical Assistance Program has documented land use planning authority in Montana in a technical assistance booklet (A primer on Land Use Planning and Regulation for Local Governments, 1994).

Following describes the existing authority:

### 1. Comprehensive Plan

The Local Planning Enabling Act (76-1-101 through 76--1-606, Montana Code Annotated) enables local government to prepare a comprehensive plan and sets out the required procedures. If enacted, the comprehensive plan must cover the entire jurisdiction and address all aspects that affect the community's public facilities, transportation, parks, recreation, economy, and housing. The planning jurisdiction may focus on incorporated urban areas or may include the entire county.

Montana law requires that zoning and development permit regulations conform to an adopted plan. The purpose of this requirement is to ensure that land use regulations are drafted and enforced in the context of the comprehensive plan. Regulations adopted in conformance with a plan are less likely to be arbitrary than those adopted in isolation. Prior adoption



of a comprehensive plan is not a prerequisite for a local government to adopt subdivision regulations. In fact, state law requires all units of local government to adopt and enforce subdivision regulations, regardless of whether they have a plan. Both the Montana Local Planning Enabling Act and the Montana Subdivision and Platting Act authorize local governments to consider compliance with an adopted comprehensive plan as a criterion for approving or disapproving a proposed subdivision (76-1-606 and 76-3-604, Montana Code Annotated).

## **2. Sub-Division Laws**

Sub-division laws regulate the process of platting land into lots and providing public facilities (roads, water, sewer, storm drainage) to the lots. Before approval is granted, local governments must evaluate a proposed sub-division's impact. This involves an assessment of the anticipated needs of the proposed subdivision for local services including roads and maintenance. Montana law requires all units of local government to adopt and enforce subdivision regulations and review development proposals that divide land into parcels less than 160 acres. Local governments that have a comprehensive plan may use it as an evaluation tool to ensure that the proposed sub-division conforms to the plan. This strengthens the authority to secure developer funding for road improvements "directly proportional to the impact" the development has on the transportation system.

## **3. Zoning**

Zoning is a legal tool by which local governments can protect the health, safety, and welfare by dividing jurisdictions into use districts (zones), restrict various uses to certain zones, and impose requirements that permitted uses must meet. In Montana, three different statutes authorize local governments to enact zoning regulations, however, zoning is not mandated. Cities and towns may adopt and enforce zoning ordinances under the Municipal Zoning Enabling Act; counties may enact zoning under the County Zoning Enabling Act, and the third statute, the County Planning and Zoning Commission Act, allows a county to enact land use regulations for an area within the county where at least 60 percent of the property owners sign a petition requesting formation of a district and adoption of regulations.

Both the Municipal Zoning Enabling Act and the County Zoning Enabling Act require that the local government have an adopted comprehensive plan for the jurisdiction and that the zoning regulations conform to the plan.

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The statute authorizing zoning by petition does not require the county to have an adopted comprehensive plan, but the planning and zoning commission must prepare a development pattern for the district that identifies the desired location or requirements for future development.

Under any of the three zoning enabling statutes, local zoning regulations must provide a process for hearing and deciding appeals. For municipal and county zoning, the governing body is required to appoint a board of adjustment to make special exceptions, grant variances, and hear appeals.

Municipalities and counties are authorized to adopt interim land use regulations while a comprehensive plan is being prepared and adopted. The purpose of the interim zoning is to protect the integrity of the prospective plan from incompatible development while the plan is being prepared and adopted.

The Municipal Zoning Enabling Act allows a city or town to adopt extraterritorial zoning--regulating land use in the unincorporated area contiguous to the city limits. Extraterritorial zoning ensures that adjacent growth to the jurisdiction is compatible with the land-use patterns of the city.

### **C. Development Permitting in Montana**

Many planners and local officials in Montana have expressed interest in alternatives to zoning as a means to regulate land use. One alternative, using existing state enabling statutes involves development permit regulations. Development permit regulations may be used to affect the character and quality of new development as opposed to zoning which affects the location. Development permit regulations may be adopted under any of the three zoning enabling statutes.

Development permit regulations may be used to implement a jurisdiction's land use plan and affect transportation impacts by having different requirements for different areas in a county. For example, there could be more specific requirements to manage growth in incorporated and unincorporated communities and less restrictive or specific standards adopted to govern development in the rest of the county.

There are three types of approaches to development permitting that can be used to affect the transportation impacts arising from land use:

- **Design standards.** These are specific quantitative standards that regulate the design and location of new development.
- **Performance standards.** These are tailored to regulate the effects of a development. Local officials can require minimum standards for air, water, solid, noise, dust, smoke emissions, or traffic safety.
- **Land capability standards.** Land compatibility requirements are based on the capability and suitability of the physical environment to accommodate development. This could include the capacity of adjacent streets.

#### D. Status of Land Use Planning in Montana

In the past, outside of Montana's major cities there has been little local interest in planning for and regulating development. Despite having the option of preparing a comprehensive plan, many counties and cities have not. Those counties that have prepared comprehensive plans have not enacted comprehensive zoning ordinances to guide implementation.

Presently in Montana, 36 out of 56 counties have completed comprehensive plans, all 128 municipalities and all 56 counties have subdivision regulations, 21 municipalities have zoning, no counties have traditional jurisdiction-wide zoning, four counties have different types of development permit regulations based on zoning, although several counties have intermittent citizen-initiated zoning districts (Montana Department of Commerce). There is currently a major citizen based planing effort underway in Flathead County, where a performance based permit system is being recommended to control development.

There is a lack of money and expertise in many local jurisdictions to undertake land use planning. During the 1970s the United States Department of Housing and Urban Development provided funding for municipal and county planning projects and circuit riders from the Department of Commerce to work with the rural communities to develop land use plans. Consequently, a number of Montana's city and county comprehensive plans were completed in the 1970s and have not been updated, amended or implemented since then. They may not accurately reflect the dynamics and trends occurring in the 1990s nor be prepared for the impact of the 21st century.

**POLICY PAPER****E. Coordination of Transportation and Land Use Planning**

The Intermodal Surface Transportation Efficiency Act (ISTEA) requires statewide and metropolitan planning organization (metropolitan planning organization) area planning to consider the effect of transportation decisions on land use and land development. Consideration of land use is to include "the need for consistency between transportation decision making and the provisions of all applicable short-range and long-range land use and development plans." (23 CFR part 450.208). This creates difficulties for Montana because there is only limited land use planning to coordinate transportation with.

**II. ACCESS MANAGEMENT AND TRANSPORTATION-RELATED LAND USE ISSUES****A. Issues Raised By Citizens**

Despite the limited experience with land use planning in Montana, there is growing interest at the local level, especially in the faster growing communities, in using land use planning to manage growth, preserve the quality-of-life, and to protect the environment. This interest is also reflected in a range of general transportation-related issues identified for the statewide plan.

These issues include:

- Concern about the increasing demands placed upon the highway system as a result of new development patterns.
- Recognition that current development patterns, access management practices, and lack of land use planning reduce the effectiveness of the transportation system.
- Reluctance to address new transportation demands through increased capacity.
- Desire to see transportation system management, demand management, and other modal options pursued to meet increased transportation demand.
- Recognition that land use decisions affect transportation.

In general, it is difficult to address these issues with only limited land use planning.



## B. Issues Arising From Existing Conditions and Practices

- **Lack of consistent rigorous application of access management policies**

On the Interstate Highway system complete control of access is federally regulated and achieved through strict geometric design standards. Not only the design of interchanges, but the spacing between interchanges is specified for urban and rural conditions.

On the system of state arterial highways, however, it does not appear that the Department's policies are uniformly or rigorously applied throughout the state. According to MDT staff, relatively unrestricted commercial parcel access to principal arterial routes contributes to increased congestion, and creates safety concerns as well. On the minor arterials, both residential and commercial access contribute to reduced safety and increased congestion. The level of congestion associated with a given volume of traffic is higher, because of the additional "friction" generated by conflicting movements as vehicles enter or depart the arterial at an uncontrolled access point.

- **Lack of consistency in application of access management standards**

There is a lack of consistent application of uniform standards across MDT's Districts which appears to be a problem. This lack of consistency is apparent at the Highway Commission level and at the District level. The need for policy-direction to establish consistency is likely to be more important under MDT's recent re-organization because each District Engineer will be reporting directly to the Director. Further, Department staff report that it has been politically difficult to enforce access controls unless there is a clear safety problem which is directly addressed by the proposed control. Denial of access, or conditioning of access, is difficult if the principal benefits are preservation of capacity and functionality.

The specific techniques used to provide adequate access, while preserving capacity and function, need to be suited to the State of Montana, and to the different needs and characteristics of urban and rural areas. For example, frontage roads in rural areas present a maintenance burden to the locality and/or the state, and may be out of character. Different techniques for access consolidation may be required in rural areas, and these need to be considered at the time of subdivision, not later.

- **The current access management approach provides limited tools for preserving corridors**

The state's current access management plan is not consistent with ISTEA terminology or guidelines. The current plan does not address new public streets, rather it deals with existing public streets and new or existing private driveways. The current plan does not provide specific criteria or a system classification specifically for access management. These were proposed in drafts of the 1992 plan but did not appear in the adopted version.

- **Growing local interest in land use planning**

Parts of Western Montana have experienced rapid growth in the past few years. This growth is geographically concentrated in a small number of counties. Growth rates are most pronounced in the counties that are adjacent to Montana's major urban areas. For example, between 1990 and 1992 population grew in rural Flathead county by 6.6 percent, in rural Missoula County by 5.9 percent, in rural Gallatin County by 8.1 percent, and in rural Yellowstone County by 5.5 percent. The results of the population forecasting conducted as part of the statewide planning indicate that Montana can expect to see a continuation of these trends.

This population growth has been accommodated by residential development in the form of new subdivisions or the permitting of new development on larger parcels of land. New development has resulted in highly visible changes in land use, especially in the highly scenic rural areas, this has generated citizen interest in land use planning and concern about some of the negative impacts of growth.

In general, it is the growth outside of the urban areas which is most visible and gives rise to the greatest concern. This is because growth in these areas results in the most visible and pronounced patterns of land use change. Put simply, it involves development of new housing at densities of between one unit to ten or fifteen acres or the development of new subdivisions at higher densities. There is concern that parts of Montana are now experiencing a cycle of development and associated land use change similar to that which has been experienced in many other areas of the West. This cycle involves new residential development adjacent to established urban areas, which then creates the market for development to accommodate retail and other service activities. Of particular concern is the tendency for this type of development to result in sprawl characterized by low density residential and commercial development.

Typically it is not the responsibility of a transportation agency to address land use planning and development. In fact, the authority to address development patterns lies at the local level. However, the consequences of this type of development affect the demand for transportation.

- **Weak land use planning adversely impacts the transportation system**

Today in Montana, travel or transportation demand is generated by land use. Travel occurs where land uses are separated by distance. The amount and purpose of the travel are related to the use of the land. Different types of land use generate different traffic rates; for example, conversion of agricultural land to residential or commercial development increases the demand for transportation. Commercial activities generate more trips than residential activities. The cumulative affects of land use change affect the level of service of the existing transportation system.

Transportation investment decisions made to maintain existing levels of service that address these travel demands can in turn have impacts on land use. Addition of capacity, or the construction of a bypass, increases the "highest and best use" of land that was previously less accessible. This increases the market demand for highway oriented development. When access to outlying areas is improved, development pressure in the surrounding area is increased. Where there is economic growth, there is a direct relationship between improved highway access and development pressure.

This type of development places significant impacts on the transportation system. The best locations for new residential and especially commercial development are those which have access onto the arterial system. Without access management policies these market trends can severely reduce the function of the arterial system.

- **Lack of corridor planning or management will affect transportation system performance**

Currently the lack of multi-county planning in Montana makes preservation of the integrity of a corridor difficult. More generally, the limited scope of land use planning and regulation impedes efforts to coordinate development with infrastructure improvements or management practices. Cities and counties allow land development to occur at a rate that is too rapid relative to transportation system improvements, creating additional access demands, and foreclosing future options for roadway improvements.



- **Land use patterns affect the attractiveness of different transportation modes**

Montana's existing, and future land use patterns, affect transportation demand and influence the relative attractiveness of different modes. Travel demands that result from low density residential development and subdivision development in outlying areas tend to be most readily met by the automobile. Montana's new development will likely result in higher rates of single occupancy vehicle trip making, and vehicle miles traveled, than is currently experienced in the urban areas. For example, in 1990 just under 8 percent of the population in Montana walked to work. There is little evidence to indicate that new development will increase or maintain in this rate.

Should Montana's communities wish to encourage the use of non-single occupancy vehicles and other modes, the effectiveness of any strategies would be enhanced through land use planning. Nationally, many states and local jurisdictions are attempting to affect the demand for transportation and improve the attractiveness of non-single occupancy vehicles modes as part of their land use planning. This is usually achieved through zoning policy which aims to concentrate commercial development in certain locations and restrict the sprawl of low density residential development. In all cases (with the exception of Hawaii) the primary implementing mechanism is through zoning and the development permitting process which involves authority vested in local units of government.

The state and the Montana Department of Transportation (MDT) has an interest in local jurisdictions undertaking land use planning as a mechanism for influencing the location and nature of transportation demand. However, land use planning is, and will likely always be, the preserve of local units of government.

- **Paying for the costs of growth**

In Montana's fast growing areas one of the most consistent and largest challenges that will face local jurisdictions, and the MDT, is paying for the new infrastructure required to maintain efficient levels of transportation service.

As part of the review of development permits, local jurisdictions and the MDT currently have the authority to require developers to fund stop lights or turning lanes and build and pave streets. There is direct authority through the granting of access permits. However, as discussed under



access management, MDT has not consistently used available access permitting authority to help defray the transportation costs of growth.

The absence of land use planning and access management increases the cost of meeting transportation demands. Successful land use planning can reduce the costs of transportation by resulting in development patterns that can affect growth in vehicle miles travelled and improve the prospects for transportation system management. This is an important issue because financing the transportation needs that arise from population growth will be extremely difficult in Montana's growing communities.

- **Limited capacity at the local level to undertake land use planning**

A fundamental transportation issue relating to land use confronting Montana is that there is little land use planning in place with which to coordinate transportation planning. This lack of land use planning adversely affects the ability of state and local transportation systems to anticipate and plan for new travel demands. Local units of government, cities and counties have the authority to undertake zoning and regulate development. However, these jurisdictions have limited resources and technical knowledge with which to undertake land use planning.

- **Need to involve local jurisdictions in addressing access management**

It is crucial to involve metropolitan planning organizations, counties, and cities in any comprehensive attempt to manage access to the system of principal and minor arterials, as these jurisdictions make the land decisions that give rise to the problem.

It is important to balance land use objectives of local communities with the State's mission of preserving the integrity and safety of the highway system. The Department's past experience with lack of political support for an access management program appears to underscore the importance of striving for some reasonable balance, as opposed to simply preserving flow on the roadways.

- **Importance of demonstrating the benefits of access management**

Successful access management strategies will enable Montana to increase the use of existing infrastructure without adding capacity. This is an attractive proposition and the benefits of access management need to be communicated to local jurisdictions and the business community.

Once an area has begun to develop, it becomes increasingly difficult to remedy the problems associated with unmanaged access. It is relatively more easy to prevent problems through proactive, judicious allocation and management of access to the highway system through the planning process.

The economic impacts of access management can be quantified and evaluated. Decisions should not be based solely on the apparent loss of land taxes and business revenues, but on a balanced evaluation of the tradeoffs including assessment of roadway construction, right-of-way, and maintenance costs. Experience in other western states illustrates that there are considerable benefits to be gained from a strong access management program.

Travel by public transit, walking, and bicycling may become more attractive through access management, not by penalizing the automobile, but by reducing the number and severity of conflict points between motor vehicles and these other modes.

It is advisable to develop an approach that links implementation of access management regulations and techniques to specified measures and criteria, and one that recognizes different facility functions, regional differences, and other specifics of a situation.

### III. POLICY GOALS AND ACTIONS

This section outlines policy goals and actions for access management and coordinating land use planning and transportation.

#### A. Access Management

Access management is considered as an important component of the overall transportation management effort, in support of the system management and preservation theme of ISTEA. Considerable net benefits will derive from consistent application of a comprehensive access management plan. The following policy goals and actions deal with access management, ranging from maintenance of the status quo to pursuit of a comprehensive access management plan that is coordinated with other ongoing efforts in data collection, forecasting, transportation systems management, and congestion management.

## 1. POLICY GOAL A: Improve corridor level access management to preserve the highway system.

This policy will involve modifying the current Access Management Plan to provide more clear guidance to MDT staff on implementation, and emphasize sharing of responsibility with local jurisdictions. The primary purpose of this policy to maintain the functional integrity and safety of the state highway system through access management and corridor preservation. The actions adopted to implement this policy will be coordinated with existing ongoing programs including data collection, demand forecasting, and congestion management.

**Action A.1.** Establish a classification scheme for access management, that defines the appropriate level of access and access control for different classes of state roadway according to functional classification, existing level of access, and surrounding land use.

A separate classification scheme for access management applications is recommended. The functional classification system used for other planning and engineering purposes is not well-suited to an access management strategy. This is because the access management classification needs to take into account the existing level and character of surrounding land use, the degree of access that has already been granted, and other factors. An access management classification system will certainly be related or "nested" with the existing functional classification system.

### Level of Effort:

Initial Year 1: 1,600 staff hours to develop and secure support for system

Annually: To be determined, could involve one full time employee

Timing: Initiate in 1995

**Action A.2.** Inventory, refine the methods, and ensure that there is adequate authority to manage access in Montana.

As a complement to the access classification scheme, MDT will develop a list of approved technical methods for managing access to highways. An attempt will be made to distinguish between those methods appropriate for different classes or facilities, urban versus rural areas, and in areas with differing levels of existing access and land development. The action

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will include identifying additional authority required, and sponsoring if necessary legislation, to provide the tools for corridor preservation.

Level of Effort:

Initial Year 1: 800 staff hours

Annually: To be determined

Timing: Initiate in 1995 complete in 1996

**Action A.3.** Work to communicate the performance benefits arising from an access management policy.

This action addresses the inevitable resistance that will meet a more aggressive access management program. Developers, merchants, and others in the business community who may fear access management need to be educated about the longer-term advantages of managed access, and the realistic implications of a continuation of relatively unrestrained access.

Level of Effort:

Initial Year 1: Include in existing public information activities

Annually: To be determined

Timing: Initiate in 1995

**2. POLICY GOAL B: Establish and fund a level of travel demand forecasting that will support an access management program.**

A desirable, though not necessarily essential, component of a comprehensive access management program is a demand forecasting system with the sensitivity to allow evaluation of alternative strategies. For example, network-based models with the ability to simulate the capacity impacts of additional roadside development and access can be used to more clearly establish the trade-off between more aggressive access control and capacity expansion. These tools can be used to demonstrate, where the conditions warrant, that maintaining the function of a highway through access management may be more cost effective than widening, even after taking economic or other impacts into consideration.



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**Action B.1.** Use the state travel Highway Information System, the TranPlan 21 travel forecasting method, and the Congestion Management System to anticipate areas and facilities in need of access management actions.

This level of effort applies existing tools at minimal additional costs. The level of accuracy is not sufficient to establish project-specific trade-offs, however.

Level of Effort:

Initial Year 1: Minimal, could be undertaken as part of congestion management system work

Annually: Minimal

Timing: Initiate in 1995

**Action B.2.** Encourage improvement of the condition of travel demand forecasting at the metropolitan planning organization level to better anticipate and identify problem areas, and to link access management policies to local land use policies.

A more demanding level of effort will allow the MDT and metropolitan planning organizations to specifically test the impacts upon capacity of additional development and access to the state system. Implementation would require dedication of additional MDT staff time to the forecasting process, including technical support and coordination for the local jurisdictions.

Level of Effort: To be determined

## **B. Land Use Planning and Transportation**

- 1. POLICY GOAL A: Encourage local jurisdictions to establish land use planning and development permitting mechanisms to manage transportation demand by building their planning capacity.**

This policy goal recognizes the MDT's leadership role through working with interested local jurisdictions to increase their capacity to undertake

land use planning. The aim is to encourage local jurisdictions to undertake land use planning that can aid transportation system management, demand management, and reduce infrastructure costs.

**Action A.1.** Work with local jurisdictions to establish and implement a consistent approach for including land use and access management strategies in urban area and metropolitan planning organization plans receiving state funding.

This action involves defining an agreed approach for addressing land use and access management as part of metropolitan planning organization and urban area transportation planning. The approach will ensure that transportation planning is coordinated with, and supports, land use objectives established in existing local land use plans. This action will assist these planning activities and establishes a consistent approach.

Implementation of this action will involve preparing guidelines, in consultation with affected local jurisdictions, that specify how metropolitan planning organization and urban area plans will coordinate with land use planning.

Level of Effort:

Initial Year 1: 400 staff hours to work with affected metropolitan planning organizations and urban areas to develop an agreed approach.

Annually: Monitoring and oversight will be undertaken as part of the existing activities performed by the urban planning section.

Timing: Propose legislation in 1997.

**Action A.2.** Work with the metropolitan planning organizations and urban areas to develop consistent land use driven travel demand forecasting capability.

Currently the MDT's Urban Planning Section supports travel demand modelling for the three metropolitan planning organization planning areas and Helena, Butte, Bozeman and Kalispell. For many of the planning areas the land use inventories are incomplete and do not reflect recent land

use changes. This affects the ability to coordinate transportation decisions with land use change.

Level of Effort: To be determined

**Action A.3** Participate in a working group of the Department of Commerce and representatives of affected local jurisdictions to develop and propose legislative recommendations for the 55th Legislature.

This action involves the MDT proposing a multiagency and multijurisdictional working group to develop legislative recommendations for land use planning. The group will include representatives of the Montana Association of Counties and the League of Cities and Towns:

Level of Effort:

Initial Year 1: 800 staff hours to develop legislative recommendations.

Timing: Initiate in 1996.

**Action A.4.** Consistently apply existing development review authority to ensure that new development contributes to the cost of resulting transportation system improvements.

Currently the MDT and local jurisdictions have the authority to review sub-division development proposals prior to permitting. This action will establish a consistent set of approval guidelines to be addressed in approved development for major traffic generators and facilities. These requirements will use existing authority. To implement the action it will be necessary to develop draft guidelines in consultation with MDT districts, local jurisdictions, and the development community.

Level of Effort:

Initial Year 1: 480 hours of staff time to develop approval guidelines.

Annually: To be determined.

Timing: Initiate in 1995.

**Action A.5** Encourage the Department of Administration, the Long Range Building Committee, and state agencies to consider transportation demands when locating new capital facilities and leasing new property.

This action will encourage the Department of Administration to ensure that state agencies, universities, and colleges coordinate the location and design of new facilities with local land use planning to better manage transportation demands that arise from these work sites.

Level of Effort:

Initial Year 1: 240 staff hours to prepare technical memorandum outlining coordination steps.

Timing: Initiate in 1995.

**2. POLICY GOAL B: As part of the development review process provide authority to enable local jurisdictions and MDT to require developer contributions to improvements that accommodate new traffic demands.**

This goal will involve establishing statutory authority for local jurisdictions and possibly the MDT to levy traffic impact fees for improvements adjacent to new development.

**Action B.1.** Establish a defensible mechanism for determining the costs of transportation improvements to be paid by the developer.

This policy provides a mechanism for helping to ensure that transportation system improvements are able to keep pace with growth. The mechanism will involve local jurisdictions and the MDT, for highways on the state systems, determining the impact on the link or segment of roadway next to proposed development. The mechanism will involve the following steps: identifying existing traffic volumes on the segment of roadway and then estimating the traffic volume to be generated by the new development. The link capacity is then calculated using the level of service standard adopted by the local jurisdiction or the state. The current link capacity is then compared to the traffic volume arising from the proposed development. If traffic growth can not be accommodated at the accepted level of service then developer improvements will be required to correct the deficiency.



**POLICY PAPER**Level of Effort:

Initial Year 1: Staff time to develop authorizing legislation.

Annual: Minimal. MDT may wish to review the effectiveness of the funding mechanism over the next 5 to 10 years.

Timing: Establish mechanism in 1995.

**IV. POLICY GOALS AND ACTIONS NOT ADOPTED**

**POLICY GOAL:** Retain the existing Access Management Plan, and focus on more consistent application of current policy at the District and Commission levels.

*Reason: The current approach to access management is inconsistent and weak.*

Weak access management is adversely impacting highway system performance.

**Action.** Define or clarify as necessary the reporting requirements from districts to headquarters on all issues relating to access management.

*Reason: The action is not necessary.*

This action should help eliminate some of the present inconsistency between Department policy and District implementation. While it could be acceptable for different Districts to maintain and apply distinct criteria, the coordination of implementation criteria and decisions with Department policy should not vary. Implementation of this action would require clarifying directives to the District engineers.

Level of Effort:

Initial Year 1: 480 staff hours

Annually: Incorporate as part of current activities

Timing: Initiate in 1995

**Action.** Based on the access management classification scheme identify those areas and corridors within the State that require rapid action and pursue a "jump start" program to address them.

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*Reason: Priority corridors will be addressed as part of selected policy action.*

This action is aimed at high growth areas where relatively rapid response will prevent further significant deterioration in highway capacity from occurring. The rate of growth in some parts of Montana may justify such action to prevent serious loss of highway capacity during the period in which a comprehensive access management plan is drafted, adopted, and implemented. The jump start program does not amount to a moratorium on new growth. Rather, it could be implemented in the form of a special study area in which department review of any new encroachment or access requests is subject to review and interim rulings, pending finalization of emerging policy or standards.

Level of Effort:

Initial Year 1:           Between 1,000 and 1,500 hours in each priority corridor

Annually:                1996 to 1997

Timing:               Initiate in 1995

**POLICY GOAL:** Develop and implement a comprehensive access management plan for the State.

*Reason: A careful deliberate approach is required to access management, the policy goals and actions selected will over time move Montana towards this option.*

This more aggressive goal would establish a program within the MDT with the primary purpose of maintaining the functional integrity and safety of the state highway system through comprehensive access management and corridor preservation. The actions of this program would be coordinated with existing ongoing programs including data collection, demand forecasting, and congestion management.

**Action.** Develop and implement performance objectives for the state system that establish acceptable function of the arterial system.

*Reason: This action is not required throughout the state.*

These actions will allow the MDT to evaluate and consider access management strategies on more equal footing with capacity increases or other capital intensive projects. These actions can and should be coordinated with those developed for other ISTEA management systems, in particular the Congestion Management System, which establishes measures of transportation system performance and desirable standards to be maintained.

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Initial Year 1: 480 staff hours

Annually: Incorporate as part of congestion management system work

Timing: Initiate in 1995

**Action.** Establish a multi-jurisdictional task force charged with developing and coordinating access management strategies between the state and metropolitan planning organizations, counties, and cities.

***Reason: Local jurisdictions will be involved in implementing the selected actions.***

This action provides a more proactive approach to involving local jurisdictions in the process of establishing and implementing effective access management policies at the level where they are perhaps most needed. The effort could be coordinated and piggybacked with the MDT's existing involvement in the planning done by urban areas and metropolitan planning organizations. The MDT could require that urban area plans specifically address access management.

Level of Effort:

Initial Year 1: 540 staff hours

Annually: Incorporate as part of existing planning

Timing: Initiate in 1995

**Action.** Support, and coordinate with, the development of federal guidelines for access management as part of an overall systems management approach to transportation.

***Reason: This is not a high priority for addressing current access management problems.***

Emergent federal guidelines for access management are likely to provide the State with additional resolve if desired. The MDT will assign staff to monitor the development of such guidelines and keep apprised of developments in technical, legal, and policy areas.

Level of Effort:

Initial Year 1: 80 hours

Annually: Incorporate into any access management program

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Timing: Initiate in 1995

**Action.** Pursue the necessary rule making authority to allow the MDT to implement access management criteria for highways under the maintenance jurisdiction of the MDT.

*Reason: The need for new authority needs to be determined first.*

As necessary, this action will involve new legislation to provide the MDT authority to establish statutory criteria that define when, where, and how access to state facilities should be limited.

Level of Effort:

Initial Year 1: 480 staff hours

Annually: To be determined

Timing: Potentially seek authority in the next legislative session

**POLICY GOAL:** Preserve the right-of-way necessary to ensure that access to state routes and principal arterials can be provided in the future.

*Reason: This goal is already established in the roadway system policy paper.*

In conjunction with modified access management policy, the MDT should review and develop coordinated policies for preservation of right of way. This is important with respect to both preserving additional width around existing corridors for future access needs and new right of way for future extension of transportation corridors.

**Action.** Use the statewide plan, Highway Information System data base and/or Congestion Management System to identify corridors likely to require expansion or reconfiguration for access management purposes.

*Reason: This goal is already established in the roadway system policy paper.*

The current and emerging tools available to the MDT should be applied to identify those state facilities that may need improvement or extension in the future. Comparisons of owned, available, and needed right of way can be facilitated with these data bases and decision-support systems.

Level of Effort:

Initial Year 1: 160 staff hours



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Annually: Minimal, incorporate in congestion management system work

Timing: 1995

**Action.** Review and identify the right-of-way preservation techniques for which the MDT has legal authority and jurisdiction.

**Reason:** *The need for this action will be determined through the actions selected.*

The State's ability to obtain land for future facility needs without compensation is of course limited. Current statutory or other authority for right of way preservation needs to be reviewed and clearly established for MDT use in the development of a corridor management strategy.

Level of Effort:

Initial Year 1: 600 staff hours

Annually: To be determined

Timing: Initiate in 1995

**POLICY GOAL:** Undertake no new initiatives and encourage local jurisdictions to address land use related issues on a case by case basis.

**Reason:** *The lack of local land use planning adversely impacts the transportation system.*

This goal reflects a continuation of the current situation in which MDT has not established a policy position of encouraging local jurisdictions to coordinate their land use planning with transportation. This goal will address ISTEPA planning requirements through coordination with existing land use plans, where they exist.

The goal involves taking no new policy action with respect to land use issues. While all authority for land use planning rests at the local level, the absence of land use planning can impact the performance of Montana's transportation system. The actions for addressing access management and corridor management discussed earlier can all provide the basis for addressing the land use factors required by ISTEPA for statewide transportation planning.

**Action.** Establish and fund a technical assistance grant program for local jurisdictions to undertake land use planning to better manage transportation demand.

*Reason: The MDT does not have a responsibility for funding land use planning*

This action provides funding for technical assistance for local jurisdictions to undertake transportation-related land use planning. Minimum requirements will need to be established that specify the scope of the land use planning that will be supported. The focus should be on land use planning strategies to help manage transportation demands. The requirements will include the specific plan elements and the implementing mechanisms which would be included. Grant recipients must agree to address the minimum planning requirements. The MDT could develop the minimum plan requirements in collaboration with the Department of Commerce, and local jurisdictions.

The minimum requirements will address land use strategies that can better manage transportation demand and be specifically linked to corridor development and preservation. These strategies include: employment concentration, locating residential areas close to employment sites, site design and mixed use development. The planning will also involve the implementation of land use strategies through local actions. These actions will include zoning ordinances and development permitting.

**POLICY GOAL:** Recommend legislation that supports land use planning in the counties experiencing fast population growth.

*Reason: The MDT is not the appropriate state agency for recommending legislative action regarding land use planning.*

This goal involves the statewide planning process recommending that the Legislature support land use planning in the fast growing communities. The goal acknowledges that weak land use planning affects the management of the transportation system but that land use planning is not, and can not be the responsibility of a transportation agency.

**Action D.1** Propose legislation to support land use planning for interested jurisdictions. This alternative will involve recommending legislative funding for land use planning. It will not require jurisdictions to plan but will assist those jurisdictions wanting to plan. To be effective it will involve establishing minimum requirements for planning. The MDT will agree to fund the transportation element of land use plans provided that certain minimum requirements are met.

Level of Effort:

Initial Year 1:        600 MDT staff hours to develop minimum requirements.  
                             800 hours other agencies.

Annual:                MDT \$200,000 a year for five years to fund transportation elements.

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State appropriation to designated lead agency (most logically Department of Commerce) \$1,000,000 in the biennium.

Timing:

Establish planning requirements in 1995.  
Initiate funding fall 1995.

**Action.** Propose legislation for the 54th Legislature requiring jurisdictions in the fastest growing counties (currently this includes Flathead County, Missoula County, and Gallatin County) to prepare land use plans to minimize urban sprawl and reduce the costs of infrastructure provision. The proposed legislation will outline minimum planning requirements legislation and include provision for a working group comprising the Department of Commerce, the MDT, and affected local jurisdictions to provide guidelines that specify acceptable minimum planning requirements. Proposed legislation could also include the provision for other slower growing counties to choose to prepare plans to meet the minimum requirements.

This option involves establishing a statutory requirement for land use planning. Like other western states, historically Montana has been reluctant to influence land use through planning. Restricting the requirement to the fast growing counties will avoid mandating planning in jurisdictions where there is no real or perceived problems for planning to address.

Any proposed legislation will need to include funding to assist the jurisdictions to implement planning. It would be unrealistic and politically infeasible to place new requirements on local jurisdictions that are not funded. Therefore, the legislation will need to be accompanied by an appropriation to support land use planning. In support of any legislative proposals the MDT could agree to contribute to funding the transportation elements of required plans.

*Reason: The MDT is not the appropriate state agency for recommending legislative action regarding land use planning.*

Level of Effort:

Initial Year 1: 480 hours staff time to develop agreed minimum requirements

Annually: 480 hours staff time to manage and participate in local planning.

\$300,000 program funding per year for 5 years to support land use planning. This assumes that there will be an interest on the part of local jurisdictions. It is likely that there will be the greatest interest in the fast growing counties. Issues to be addressed in managing the program include, whether to require a local funding match and

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how many planning efforts to support each year. This level of funding assumes that planning is supported in two or three jurisdictions per year over a five year period depending upon local match. At this point MDT could undertake a review of the program to evaluate success and then determine whether to continue.

Timing:

Establish minimum guidelines, solicit participants in 1995.  
Fund planning starting in 1996.

**V. REFERENCES**

Land Use Planning and Regulation for Local Governments, 1994. Montana Department of Commerce, Community Technical Assistance Program.

Scenic Byways Feasibility Study, 1994, Montana Department of Transportation.



# Montana Department of Transportation

## TranPlan 21



### PUBLIC TRANSPORTATION IN MONTANA

#### Policy Paper

December 12, 1994

prepared by

DYE MANAGEMENT GROUP, INC.

in conjunction with

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## **I. PUBLIC TRANSPORTATION IN MONTANA - BACKGROUND**

This policy paper identifies potential policy goals and actions for public transportation in Montana. As background, the role that public transportation currently plays in Montana's transportation system and the trends in the provision and use of public transportation in Montana are described. The key issues relating to the future role of public transportation in Montana's transportation system and policy goals and options for addressing them are outlined.

### **A. Key Characteristics of Public Transportation in Montana**

Public transportation is addressed in this paper (and by TranPlan 21) in its broadest sense, to include all the passenger transportation options available, other than driving alone. This includes urban and rural transit, demand responsive transit for the elderly and disabled, passenger rail, intercity bus, commercial scheduled air service, and car and van pooling. These components of Montana's current public transportation system have been examined as part of the TranPlan 21 technical work.

Public transportation services are provided by the private sector, not-for-profit organizations, and different public agencies. In recent years Montana has experienced changes in the organization and provision of public transportation. In general there has been a steady continued reduction in the public transportation services available and in the use of these services. The decrease in service has been most pronounced for intercity travel. In 1979, Amtrak ended service across the southern part of the state and intercity bus services have steadily declined. This trend continues, in the short time period during which the plan has been prepared, a number of intercity bus providers have stopped operating and there is a strong possibility that Greyhound Lines Inc., will not serve Montana after January 1, 1995. Amtrak has also announced plans to reduce service from seven to four days a week.

The following summarizes the key features of Montana's public transportation system:

**Intercity Bus.** Intercity bus companies provide service to and between Montana's major urban areas, despite a severe decline in intercity bus service in Montana over the past decade. Recently, Intermountain Bus Lines ceased business and there is a very strong possibility that Greyhound Lines, Inc., will soon cease service in Montana. Rimrock has taken over some of the former Intermountain Bus Lines routes.

**Urban Transit Systems.** There are urban transit systems in Missoula, Great Falls, and Billings. These systems are used mainly by the transit dependent. Overall ridership is low and journey-to-work trips account for between a quarter and a third of all passengers. In Billings the Census reported that 1.2 percent of work trips were by bus, in Missoula 1.5 percent, and in Great Falls 1.0 percent in 1990. Overall ridership has been falling, in 1993 the urban transit systems carried just over 1.5 million passengers. Between 1990 and 1993 ridership in Billings fell by 21 percent and in Great Falls by 13 percent although 1994 ridership has increased in Billings.

The information available from urban area plans and transit development plans indicate that Montana's urban transit systems and automobiles serve entirely different markets in Montana today. Transit mainly provides mobility options for those without cars because they can not afford them, are too young, are physically not able to drive, or do not have a driver's license.

**Rural Transit Systems.** Rural areas and cities under 50,000 population depend upon small urban and rural transit systems in addition to transportation provided through a variety of health and human service organizations. There are nine rural public transportation systems in Montana. Two of these, Butte and Kalispell, are fixed route. These are funded under Section 5311 of the Federal Transit Act (formerly Section 18). These systems are operated by local nonprofit organizations or local government and provide demand-responsive services. In 1993 the rural transit systems carried 326,441 passengers, an increase of some 13,657 since 1990.

**Public Transportation for the Elderly and the Disabled.** Operators that provide services for the elderly and disabled are eligible for federal funding for capital expenses from section 5310 of the Federal Transit Act (formerly Section 16). Historically, Montana has had an active successful program and received the first Section 5310 vehicles in the United States. There are now more than 75 recipients of Section 5310 funding across the state. In 1993 over 127,000 rides were provided to elderly and disabled passengers, a figure that has been increasing in recent years.

**Passenger Rail.** Passenger rail service in Montana is provided by Amtrak, the National Railroad Passenger Corporation, which is a federally subsidized nonprofit corporation. Amtrak currently operates across the northern portion of the state, providing daily eastbound and westbound service to 12 stations in Montana. Only a minority of the state's population has access to Amtrak services, 23 percent of the population lives in a county with an Amtrak station, or in a neighboring county. In the ten years from 1984 through 1993 Amtrak ridership increased in Montana by 14 percent. Ridership has risen markedly at Whitefish, East Glacier Park, Essex, and Belton-West Glacier stations. This is due to

increased use of rail to access summer and winter tourist destinations and the growth in population in these areas. Stations further east at Havre, Malta, Glasgow, and Wolf Point have experienced a decrease in boardings and deboardings. In December of 1994 Amtrak announced plans to reduce service from daily to four days a week.

**Commercial Scheduled Air Service.** Despite the state's sparse population, Montanans have good access to air transportation. Almost all Montanans are within a one county distance of an airport with scheduled commercial service. Air transportation services are usually provided by the private sector in response to market demand. Air transportation services to eight Montana airports: Glasgow, Glendive, Havre, Lewistown, Miles City, Sidney, West Yellowstone, and Wolf Point are subsidized by the federal government's Essential Air Service program. There is some uncertainty over the future of this program and the criteria affecting the subsidy.

Recent trends in enplanements and service provision indicate that Montana will be adversely impacted by restructuring in the airline industry. In recent years overall growth in enplanements has been low and there have been withdrawals by major carriers from the Montana market.

## **B. Key Challenges For Public Transportation in Montana**

Montana shares with the Nation an overwhelming reliance on the private automobile for mobility, however, the state faces unique challenges to public transportation. Montana lacks the compact, dense population and development patterns that traditional forms of public transportation can most efficiently and effectively serve. Instead, the state is characterized by low population densities, widespread and scattered facilities and development, few, if any parking problems, no severe congestion, and short journey-to-work times.

The following describes the major challenges for public transportation in Montana:

### **1. Dominant Use of the Private Automobile**

The people of Montana overwhelmingly choose the private automobile for their mobility needs. This preference is growing, reinforced by increasing rates of automobile ownership, land use patterns, low energy prices, and more drivers making multi-destination trips. Most Montanans only think of transportation in terms of the highway and their car.

The trends in the availability and nature of public transportation have been shaped by this ever greater reliance on the private automobile which has



reduced demand for public transportation and facilitated growth and development patterns that are difficult to service efficiently by public transportation. Montana now has one of the highest rates of automobile ownership in the Nation. Currently, there is a low use of public transportation in Montana. In 1990 just under 1800 people used public transportation each day for their journey-to-work. In many communities and rural areas the only mode of transportation available is the private automobile.

## **2. Low Population Densities**

Montana has low population densities and relatively small communities. This results in a small market for public transportation. Although parts of Western Montana will experience rapid growth over the next twenty years, the fastest growth will occur in rural areas adjacent to the larger cities. These trends are likely to result in a continuation of low density settlement patterns that are difficult to serve by public transportation.

Low population density results in travel demands in Montana that are not conducive to the traditional forms of public transportation such as buses, light rail, or subways. These forms of mass transit require large populations traveling along heavily used corridors through densely developed, compact areas with large employment sites. This dense form of travel involves a many-to-one travel pattern, with people traveling from many locations to one or a few sites of employment. Montana does not have such conditions. The opposite is true, Montana has few large concentrations of employment with few work sites housing over 200 employees. Most journey-to-work travel in the state is done on a many-to-many basis, with many people traveling to many dispersed locations or employment sites. In addition, it should be noted that journey-to-work trips represent a decreasing proportion of travel demand and the faster growing non-work trips are typically more difficult to serve by transit because they have scattered destinations and not concentrated in peak hours.

## **3. Declining Ridership and Segmentation of the Public Transportation Market**

Public transportation use in Montana is declining. There has been a decline in ridership of urban transit, decline in intercity transit, and an increase in ridership of specialized services. If these trends continue, public transportation in Montana will be targeted increasingly to particular groups or market segments with schoolchildren riding school buses twice

a day, senior citizens and the disabled riding the social service van, and the remaining transit dependent segments, usually low income and those with no other travel alternatives, riding transit, where available.

#### **4. Relative Attractiveness of the Automobile**

The cost of travel, travel time, convenience, comfort, and safety are all factors affecting the relative attractiveness of different modes. In Montana the trends associated with these tend to be in favor of automobile travel, rather than public transportation.

Accounting for inflation, the cost of owning and operating an automobile increased only slightly by about 3.7 percent between 1985 and 1992 (American Automobile Association, "Your Driving Costs," 1993 edition). During this time the cost of gasoline and oil fell by 4.1 percent. Driving is the most affordable cost effective means of transportation for the majority of Montanans. In the harder to quantify areas of convenience, comfort, and overall journey time (from door to door) it is difficult for public transportation to compete with the low cost and convenience of the automobile.

#### **5. Land Use and Development Patterns**

Butte, Billings, Helena, and many of Montana's other urban areas are much older and consequently were developed as more compact communities than newer cities in the West. Their earlier type of land use and development allows easy access by pedestrians and service by public transportation. Public transportation and pedestrian traffic go hand in hand because public transportation users, once their journey is over, must be able to easily complete their trip to their final destination on foot.

Montana's current development patterns, in both rural and urban areas, consist of dispersed growth that can only be accessed easily by car. Services and employment sites are no longer within walking distance of each other, so that several car trips are necessary to complete life-sustaining activities. New development is oriented to the automobile, with large set backs from the road, surrounded by parking lots, and lacking easy access by pedestrians and by public transportation. Much of this development competes with the older central business district as a trip destination, further reducing the market for public transportation.

## **6. Funding**

Funding for urban and rural transit comes mainly from the federal government, local sources, and users. There is very limited direct state funding. Restricted funding levels place constraints upon the level of service provided and the existence of service in many communities. Current public transportation funding provides services to segments of the population in specific areas, at specific times, with extremely limited evening and weekend service. As a result, people who are dependent on public transportation have difficulty in leading the highly mobile lifestyle typical of most of their friends and neighbors. Employment is more difficult because work schedules and transportation schedules must coordinate.

## **7. Independent Behavior**

The people of Montana value their independence and take pride in their Western spirit of self-reliance, resourcefulness, and equanimity under difficult conditions. In common with most Americans, the people of Montana perceive that driving their own cars when and where they want is a right, not a privilege. Governmental mandates that would force people not to use their cars would not progress farther than the pre-planning stage, particularly when traffic congestion, development densities, and the inconvenience of using one's own car - all factors which influence people to leave their cars at home - are relatively insignificant. Most Montanans have short journeys to work and no parking problems, which limits the benefits to them from using public transportation. However, this independence and self-reliance could be the basis for the development by the people of Montana of innovative, attractive public transportation services that would best meet their needs.

## **8. New Retirees and Aging Population**

In common with the rest of the country, Montana is experiencing changes in the composition of its general population and its work force. Areas of Montana are attracting retirees and as a whole the population of the state is aging. Senior citizens who move to Montana are active and have every intention of driving as long as they can. When they are no longer able to drive safely, the provision of services to a dispersed population of senior citizens will be difficult. In previous generations, senior citizens who could no longer drive depended on their families for transportation. This network is usually not available today.



## **C. Importance of Public Transportation to Montana**

The importance of public transportation to the state's residents is probably best understood by the people and their families and friends who lack other modes of mobility. In a country dominated by the car, to live without a car is unthinkable, except in the most densely populated urban areas. In the past, a car was not so necessary to the maintenance of life because of family networks, functioning central business districts, fewer numbers of senior citizens, less consolidation of facilities (such as medical) and closer community ties. Today people and services are remote and access is not easy. Public transportation can fill the gap between people and life-sustaining activities.

As the earlier analysis showed, there is little competition between the car and public transportation today in Montana. Therefore, public transportation is most important to that segment of the population without access to a car. It performs a social role providing basic mobility for many Montanans.

The following highlights the current and future importance of public transportation in Montana:

### **1. Mobility for the Elderly and Disabled**

Public transportation systems are particularly important for the elderly and disabled; two population groups that are growing in size in the state. Systems serving these groups are usually small, designed specifically for the needs of their target group of users, and are not available to the general public. They serve the elderly and disabled well and allow people to maintain their independence and remain in their own homes, without being forced to enter an institution.

These specialized systems provide services:

- On a local city, town, or county intraservice area basis (i.e. travel to grocery store and other life supporting activities).
- On a regional interservice area basis (i.e. travel to regional medical center).



## **2. Access to Social Service**

Public transportation plays an important role in linking social services and the people who need them. Often these people have no other means of reaching the services they need. Lacking transportation, they cannot help themselves become independent and self-supporting. The elderly, the disabled, low income people, and children at risk fall into this category. Social services accessed by public transportation are senior centers, nutrition sites, sheltered workshops, adjustment training centers, and others. Public transportation allows people to meet social service goals such as independence and productive community membership.

## **3. Basic Mobility for Montana's Residents**

A minimum level of intercity services, urban, and rural transit provide a key role in ensuring the connectivity of Montana's rural areas, smaller cities, and large urban centers. Even with low levels of service, this is essential for maintaining rural communities. In urban areas it provides a basic mobility option for residents without cars and those temporarily without access to one.

## **4. A Tool for Managing Future Traffic Growth and Congestion and Improving Air Quality**

In Montana today, transit serves an entirely different market than the automobile. Its success cannot be measured in terms of congestion alleviated or reduced vehicle miles travelled. However, as parts of Montana continue to grow rapidly, public transportation could play an important role in meeting some of the new travel demands. In Missoula transit plays a role in improving air quality.

# **II. PUBLIC TRANSPORTATION ISSUES**

## **A. Issues Raised By Citizens and Industry Representatives**

Citizens and industry representatives identified a number of issues concerning the current and future roles of public transportation in Montana. The issues are described in detail in the TranPlan 21 - Issue Identification Results report. The overall sentiment is one that supports, in principle, the availability of a public

transportation system in Montana and a belief that such a system is important for social, mobility, and environmental reasons.

The general issues identified were as follows:

- **Desire for a multimodal transportation system.** This sentiment is strongest in the urban areas of the state. While there is recognition that the automobile will continue to be the most important means of transportation, there is strong feeling that it is time to start providing alternatives where it is feasible.
- **Recognition of the social role of public transportation.** There is widespread recognition that the needs of the transit dependent will increase in the future and strong feeling that a basic minimal level of transportation service should be provided where feasible.
- **Need to promote public transportation.** The availability and benefits of public transportation are not known to most Montanans and existing services that are under utilized should be promoted.
- **Desire to provide transit-friendly infrastructure.** In Montana's large urban areas there is strong interest in meeting future transportation demand through increased transit use. Land use and design guidelines that facilitate transit use are considered important for success. However, there is strong skepticism about the cost-effectiveness of existing fixed route systems for moving people.
- **Concern about the conditions of terminals, the lack of intermodal passenger facilities and connections.** The poor condition of terminals and facilities adversely affects the image of public transportation. This concern was most acute for intercity passenger terminals.
- **Concern about lack of coordination between systems.** There is concern about the lack of coordination between existing urban, rural, and intercity systems.

## **B. Issues Arising From Existing Conditions and Trends**

The following public transportation issues arise from the evaluation of recent trends, existing conditions, and practices as part of the TranPlan 21 technical work.

- **Need to establish policy goals defining the MDT's role in public transportation.**

The state's current involvement in public transportation is through the administration of federal funding programs. The MDT's involvement is restricted to urban and rural transit systems and elderly and disabled transportation. In this capacity, MDT is helping to ensure minimum levels of mobility in rural areas and statewide for the elderly and disabled. A key issue for the MDT is whether existing programs should be expanded beyond the federal funding allocation.

The state currently has no role in intercity bus, passenger rail, or urban transit. The intercity bus industry provides the only means of intercity and intrastate travel for a segment of Montanans and it continues to decline. Intercity bus services are provided by private sector firms. There are a range of potential actions open to state government for ensuring a minimum level of service. They would all involve establishing working relationships with the private sector. A key issue for the MDT is whether there should be a state role in intercity bus provision or facilitating the use of bus and passenger rail.

The extent and rationale for any state role in funding transit must be carefully considered. The federal and state role in highway funding is tied to the concept of functional classification. The higher the function, the higher the priority. In this way local roads and streets do not receive federal and state funds. These are funded locally. By this logic, where public transportation serves a statewide or regional function there is a clear "state interest." This would indicate state interest in intercity and regional service providers.

There is, however, a state interest in having a certain minimum level of urban and rural transit to serve as a "mobility safety net" for Montanans and in the future in providing a strategy for preventing or reducing congestion.

- **Public Transportation Is Not Well Understood**

Public transportation is not well understood and its benefits are not as easy for the public to identify as the benefits of a highway widening project or the construction of a parking garage. No exact dollar amount can be placed on the ability of everyone being able to sustain their lives and move about independently. Public transportation is a complex issue

because the community must reach a consensus that mobility for everyone is an idea worth supporting in a concrete and sustained fashion.

- **Need to Recognize the Constraints Upon Transit in Montana**

The TranPlan 21 issue identification effort documented a strong public interest in public transportation and transportation demand management activities such as carpools, vanpools, or telecommuting as a strategy for meeting travel demand and protecting the environment, especially air quality. However, there is little technical evidence to suggest it is realistic to plan on meeting any but a small portion of Montana's future automobile travel demands through public transportation.

Population growth will itself create new demands for public transportation. As Montana's population and large urban areas continue to grow public transportation will have a role to play in meeting new travel demand but it will not remove the need for an efficient urban highway system. The opportunities for increasing the role of public transportation in meeting future travel demands will be greatest in urban areas and along the most highly traveled highway corridors.

Public transportation may offer opportunities for preserving air quality in Montana's larger urban areas, however, public transportation can only play a role in protecting air quality if it is used. It is important to bear in mind that older diesel buses are heavy emitters of pollutants.

- **Need to identify opportunities for public transportation that will work in Montana**

Urban transit does not serve Montana's travel patterns well. When it attempts to do so, the resulting poor performance is used as evidence that public transportation is a waste of money and should be abolished. For example, in 1993 both the Great Falls and the Billings transit systems carried less than one passenger for each service mile. Rather than focusing on traditional forms of public transportation, the people of Montana should encourage more innovative uses of bus systems and identify opportunities for other forms of public transportation, such as vanpools or carpools.



There is interest in applying transportation demand management techniques to Montana such as carpooling, van pooling, and telecommuting that are being used elsewhere. It is not immediately evident how successful they would be in Montana. Where moderately successful nationally, these programs are targeted to the work trip in some of the densest and largest travel markets in the country. There is little evidence to suggest that such measures would have much impact on travel demand in Montana's urban areas. However, there may be individual niches that can be filled by van pools.

- **Importance of ensuring support for existing publicly funded transit**

For a sparsely populated large state, Montana has an extensive network of rural, elderly, and disabled transportation service providers. However, there is no consensus of public opinion that public transportation is a necessary component of a community's infrastructure, in the same category as water and light, sewers, trash disposal, and streets and highways. At the same time, taxpayers are disenchanted with entitlements and "rights" and are reluctant to pay more for the public good. In this environment it is important to build community consensus and support for public transportation.

- **Accommodation of public transportation on the highways**

It is important to remember that public transportation in Montana uses the highway system or, in the case of rail and air, depends upon the highways for access. Therefore it is important to address public transportation needs as part of the project development process. This is most important in urban areas and selected corridors.

- **Continued decline in intercity bus industry**

The continued decline in intercity bus service in Montana means that for a majority of communities there are no intercity travel options other than a car. Currently, 28 percent of Montanans live in counties not served by intercity bus. The service levels may decrease further if Greyhound Lines, Inc., ceases to operate in Montana. For people without a car, limited resources, and no family on which to rely, intercity travel is impossible in many parts of the state.

It is not feasible for existing providers, which comprise of small specialized transportation systems, to meet intercity travel needs. Budget constraints, no available vehicles except for local service, and regulations that prevent intercity travel offer no avenues, except car or ambulance, through which, for example, a senior citizen can get to the regional medical center located two hundred miles away.

- **Lack of performance goals and standards for public transportation**

Partly because public transportation is not well understood, lacks consensus, and has changing roles, standards of performance for levels of service are not applied to the different systems in Montana. Without standards and performance measures, comparisons between systems and measurement of service levels are impossible. In the absence of this information it is difficult to allocate funding in the most effective manner and to identify where local systems can benefit from managerial assistance. The MDT is implementing a public transportation management system that will provide performance measures such as passengers per mile, cost per mile, and others that can provide improved information for public transportation.

- **Need for improved coordination and cooperation between providers**

Coordination of services can bring more service to users and more efficient use of resources. Cooperation between public transit needs and private transportation systems inevitably leads to issues about regulations. Often these state and federal regulations prevent coordination of services. For example, senior citizen transportation services cannot provide rides for clients of the adjustment training center and certainly no one rides a school bus except children involved in school related activities.

Coordination and information sharing about transportation activities and transit services for specific segments of a community are lacking, and transit providers have difficulty in sharing resources such as vehicles, staff, maintenance, and funds.

### **III. POLICY GOALS AND ACTIONS**

This section outlines adopted policy goals and actions for the MDT's role in public transportation.

**A. POLICY GOAL A: Promote and support increased use of public transportation systems.**

**Action A.1.** Support local promotional/educational programs to publicize public transportation opportunities.

This action involves supporting local efforts to publicize the availability of public transportation and encourage its use. A major emphasis in the program will be on changing people's attitudes about public transportation and then their actions. Potential riders will have to be educated on how to use the available services and reassured as to the service's safety, reliability, and convenience. Promotional activities should communicate "what's in it for me" to the potential rider in the most specific terms.

Level of Effort:

Initial Year 1: 240 MDT staff hours to prepare materials and implement the program.

Annually: 480 MDT staff hours

Timing: Initiate in 1996

**Action A.2.** Ensure highway improvements address public transportation needs.

This action involves consideration of transit infrastructure needs as part of advance project planning and design. Inclusion of public transportation in the initial stages of urban highway improvement projects allows public transportation to function as an integral part of the area's transportation network and reduces the need for expensive and disruptive retrofits of the street and highway network. Appropriate bus pullouts, sidewalks, and park and ride lots are easier to build as part of a highway project, rather than being added later. The recommendation is applicable to fixed route systems. In urban areas fixed route transit system needs should be included in metropolitan planning organization's and urban area long range plans.

Level of Effort:

Initial Year 1: 1000 MDT staff hours

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Annually: 1000 MDT staff hours

Timing: Initiate in Fall 1996

**Action A.3.** Provide state-level funding support for transit by providing a fixed amount of funding for rural transit systems "off the top" of Surface Transportation Program funds, and transfer urban highway funds to transit at the request of metropolitan planning organizations.

This action uses Surface Transportation Program to provide a mechanism for making flexible funding available to rural transit systems. The transit providers will be required to meet the required match for capital funds and be able to meet operating costs. To meet the match providers will require local funding or state support.

**Action A.4.** Coordinate state planning, urban area and transit system development planning and management.

There is already a good level of coordination. This action will help further ensure the coordination between planning and management of the highway and transit systems. This will be achieved by increasing transit agency participation in urban area planning, either through participation on policy committees or more involvement in technical committees. In turn, there will be state interest in the transit development planning undertaken by the transit systems. These transit plans should offer mechanisms for evaluating the applicability of transportation demand management and innovative service provision initiatives in Montana's urban areas. In addition, transit development plans should identify any associated highway improvements necessary for enhancing transit.

Level of Effort:

Initial Year 1: 500 MDT staff hours

Annually: 500 MDT staff hours

Timing: Initiate in Fall 1995

**Action A.5.** Establish minimum transit service goals in cooperation with local agencies.

A public transportation management system is being developed that will provide information on the performance of transit systems in Montana. This action will



develop minimum service goals against which performance and transit needs should be measured.

Level of Effort:

Initial Year 1: 480 MDT staff hours to develop level of service goals

Timing: Initiate in 1995

**B. POLICY GOAL B: Preserve existing intercity public transportation service and encourage/facilitate the development of new services.**

**Action B.1.** Work with the intercity bus industry to identify the most effective state-level actions for preserving existing service.

The continued decline in Montana's private intercity bus industry is the result of both national restructuring in the industry as well as decreasing ridership and increasing costs. This action involves working with the providers to identify the most effective actions open to state government to preserve the existing service. The MDT has already commissioned a study to identify potential elements of state level intercity program.

Level of Effort:

Initial Year 1: 320 staff hours

Annually: To be determined by intercity study

Timing: Undertake study in 1995 and implement recommendations immediately.

**Action B.2.** Evaluate the costs and feasibility of funding new intercity service in unserved areas.

Many areas of the state have no intercity bus service to major urban areas. This is especially true for large areas of central and northeastern Montana. This action will evaluate the costs and feasibility of state intervention to fund the provision of service. There are a variety of mechanisms that should be involved. These range from contracting with existing providers (public or private) to run twice weekly services to major urban areas to purchasing vans for intercity service. This action will evaluate the costs and potential funding mechanisms.

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Level of Effort:

Initial Year 1: 480 staff hours for feasibility study

Annually: To be determined by study

Timing: Undertake study in 1995 and implement recommendations immediately.

**Action B.3.** Fund the implementation of a "rural ridesharing" demonstration program.

This action involves evaluating the potential for meeting some of Montana's intercity transportation needs through a rural ride sharing program. This could help meet mobility needs and serve as a rural ridesharing program. Nationally most ride sharing has been developed as a congestion management strategy. This action will involve evaluating the success of the ridesharing program in rural areas. It will require either hiring a ride share coordinator or contracting with a local provider to implement the demonstration program.

Level of Effort:

Initial Year 1: 480 MDT staff hours

Annually: Three year demonstration at \$50,000 per year.

Timing: Initiate in 1996

**Action B.4.** Work to improve publicly owned intermodal passenger facilities.

This action will involve considering funding for improving passenger rail and intercity bus facilities. Many of the state's rail and bus stations are in poor condition. Improvements can make the use of public transportation more attractive and increase its patronage. The action will require working with Amtrak, airports, and intercity bus providers.

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Level of Effort:

Initial Year 1: 200 MDT staff hours to establish funding criteria.

Annually: Dependent upon projects funded.

Timing: Initiate in 1995

**Action B.5.** Coordinate with Amtrak to facilitate increased use of rail and preservation of existing service levels.

This action involves establishing a working relationship with Amtrak to identify state actions that may increase the use of Amtrak and preserve existing levels of service. There has been a decrease in passengers using stations in eastern Montana and this action will try to ensure that service is retained at these stations.

Level of Effort:

Initial Year 1: 400 MDT staff hours

Annually: 400 MDT staff hours.

**Action B.6.** Evaluate intermodal passenger connections using existing bus, train, or airline terminals.

This action involves identifying opportunities to improve existing facilities for shared use by more than one mode and service provider. This could include the coordination of schedules and ticketing procedures, and integrated baggage handling facilities for ease of interline and multimodal use.

Level of Effort:

Initial Year 1: 600 staff hours to assess feasibility

Annually: To be determined

Timing: Initiate assessment in 1996  
Implement in 1997

**POLICY PAPER**

**Action B.7.** Ensure that Montana's interests in expanded passenger rail service are addressed in any national decision making concerning increased Amtrak service.

This action involves tracking national initiatives to increase passenger rail and ensuring that Montana's interest in east-west service across the southern tier of the state is addressed.

Level of Effort:

Initial Year 1: 80 staff hours

Annually: 60 staff hours

Timing: Initiate in 1995

**C. POLICY GOAL C: Work to improve service to social service passengers and the transportation disadvantaged - the elderly, children at risk, low income, and the disabled - through interagency coordination.**

**Action C.1.** Improve state agencies and local provider cooperation in funding coordination.

This action will involve all state agencies reporting expenditures on passenger transportation. The action may involve legislation that requires all agencies to report this expenditure. The MDT could then use this information to identify opportunities for coordinating social service passenger transportation programs.

Level of Effort:

Initial Year 1: 200 MDT staff hours to identify impediments to coordination.

Annually: 200 MDT staff hours annually.

Timing: Initiate in 1996

**Action C.2.** Establish a statewide coordinating council to increase flexibility in budgets and budgeting processes so that transportation providers can more easily access and coordinate available funds.



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Various state, local, and non-profit social service organizations provide transportation services beyond those funded through the MDT's administration of federal grants. There is only a limited amount of coordination between these agencies. This is because many of the agencies do not consider themselves to be in the business of delivering transportation services. This action provides a mechanism for improving this coordination and avoiding the duplication of funding and overlapping functions. This could result in the increased utilization of existing equipment, improve service, and make for a more effective use of public dollars.

**Level of Effort:**

Initial Year 1: 200 MDT staff hours to prepare proposal

Annually: Quarterly meetings  
160 MDT staff hours  
800 staff hours other agencies

**Timing:** Initiate in 1996

**Action C.3.** Work with the Public Service Commission to facilitate easier entry into passenger service provision (especially Medicaid transportation).

This action will identify opportunities for reducing regulations, without jeopardizing safety and reliability, and streamline procedures for entry into service provision.

**Level of Effort:**

Initial Year 1: 200 MDT staff hours

Annually: 40 MDT staff hours

**Timing:** Initiate in 1995

## **D. POLICY GOAL D: Identify and implement transportation demand management actions that will work in Montana.**

**Action D.1.** Encourage metropolitan planning organizations and urban areas to evaluate demand-side strategies in their plans.

This action supports existing planning efforts and will encourage Montana's urban areas to work with the transit systems to identify and consider demand-side strategies applicable in Montana as part of their urban area planning. This could include measures to reduce the number and length of individual trips that people make. Among the strategies to include are promotion of ride share programs, telecommuting, and compressed work weeks.

### Level of Effort:

Initial Year 1: 320 MDT staff hours

Annually: 200 MDT staff hours

Timing: Initiate in 1995

**Action D.2.** Work with other state agencies to develop a transportation demand management program for state government.

This action involves developing a transportation demand management program for state government. The MDT will take a leadership role by determining the most effective potential approaches for state employees and then implementing these over the decade. State government is the largest employer in Helena and has many single large employment sites that are more conducive to transportation demand management. The transportation demand management program will be incorporated as an element of any updates to the Helena urban area plan. The program should be long range in perspective and involve incremental implementation. If participation is low and trip reduction minimal the program should be terminated.

### Level of Effort:

Initial Year 1: 640 MDT staff hours to prepare program

Annually: To be identified in the program

Timing: Initiate in 1997

#### IV. POLICY GOALS AND ACTIONS NOT ADOPTED

**Action.** Allow transit projects to compete with highway improvement projects on the "primary system."

**Reason:** *Flexible funding for urban and rural transit is best addressed by the selected actions.*

This action will provide a mechanism in future years for implementing congestion management strategies such as funding van pool acquisition or small buses and developing intermodal facilities. The action will require a local match.

Level of Effort:

Initial Year 1: 480 Staff hours to develop any legislative changes required and/or criteria for evaluating eligible transit projects.

Annually: Minimal staff effort. Project evaluation will be incorporated into the MDT's programming and project selection processes.

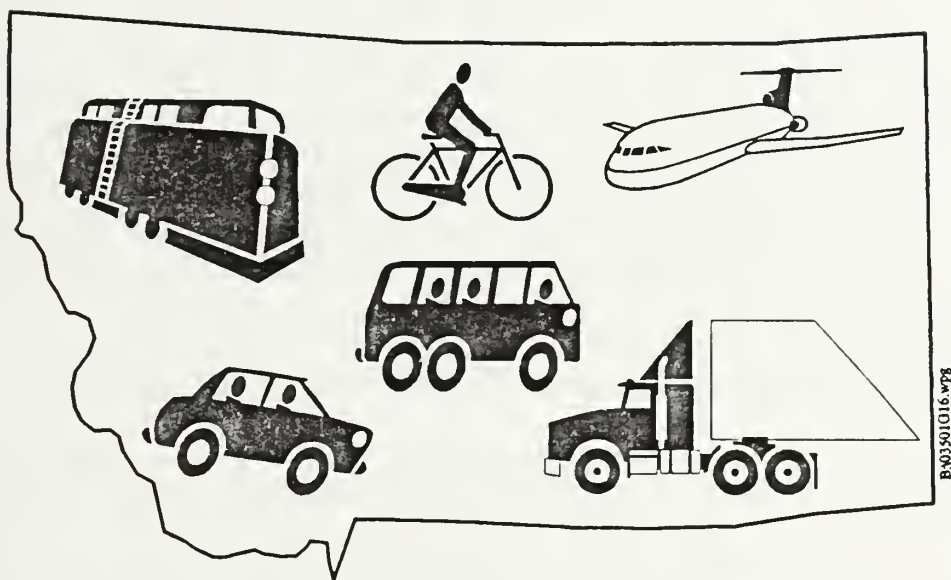
Timing: Initiate in 1995





# Montana Department of Transportation

## TranPlan 21



### Bicycle and Pedestrian Transportation

### Policy Paper

December 12, 1994

prepared by

DYE MANAGEMENT GROUP, INC.

in conjunction with

Fischer and Associates

## **I. BACKGROUND - BICYCLE AND PEDESTRIAN TRANSPORTATION IN MONTANA**

### **A. Bicycle and Pedestrian Modes in Montana**

Analysis of bicycle use usually distinguishes between the use of bicycles for work related trips and errands as opposed to use for recreational purposes.

#### **1. Bicycles as a Mode Choice In Montana**

There is little information on the demand for and the use of bicycles in Montana for anything other than journey to work trips. The primary source of data from which to draw conclusions about bicycle ridership is the journey-to-work data collected for the 1990 Census. These data are summarized in Exhibit A, for the state as a whole, and in Exhibit B for selected cities. These data reveal that in 1990:

- Just under one percent of all journey-to-work trips were by bike.
- Overall bicycle use for journey-to-work trips is low in urban areas and especially low in Great Falls, Billings, and Butte.
- Missoula and Bozeman have the greatest concentration of bicycle use.
- In 1990, eight percent of all journeys to work were pedestrian trips.

Although bicycle ridership in Montana is low, based on Census data, the rate of bicycle use for journey to work trips in Montana is twice the national average.

There are no data available about the use of bicycles as a mode choice for other types of trips.

#### **2. Walking as a Mode of Travel in Montana**

Walking is an element in almost every trip. Just under eight percent of Montanans walk to work every day, which is almost twice the national average. The median journey time for people walking or cycling to work in 1990 was just under eight minutes. Journey-to-work is the only

systematic data available concerning walking. However, it does not include the use of pedestrian facilities by those under 16 and walking for errands and other activities. One reason for the importance of pedestrian trips in Montana is that the states' urban areas are relatively old. They were built as towns with much greater density than today's development patterns. Walking is a traditional form of transportation in small towns across Montana.

### **3. Recreational Use in Montana**

There is no systematic information available about recreational bicycle use. However, there are a number of active local bicycle clubs that organize fun rides and other events. The types of information that help plan for bicycle needs include: periodicity which is how frequently recreational rides take place, the characteristics of the riders including whether they are families, and the length of recreational trips.

The Missoula based Adventure Cycling organization has established some nationally noted cross country routes. Routes through western Montana include:

- Highway 37 Libby to Eureka.
- Highway 93 Eureka to Kalispell.
- Highway 40 Whitefish to Columbia Falls.
- Highway 2 Kalispell to East Glacier.
- Highway 35 East shore of Flathead Lake.
- Highway 83 Bigfork to Clearwater Junction.

**Exhibit A**  
**Montana Statewide**  
**Means of Transportation,**  
**Journey to Work in 1990**

(Age 16 and Over)

<b>Journey to Work</b>	<b>Total</b>	<b>Percent</b>
Drove Alone	249,820	71.8
Car Pool	41,171	11.8
Walked	26,780	7.7
Worked at Home	21,876	6.3
Bicycle	3,203	0.9
Other Means	2,416	0.7
Bus	1,762	0.5
Motorcycle	709	0.2
Taxicab	195	0.1
<b>Total</b>	<b>347,932</b>	<b>100.0</b>

Source: U.S. Department of Commerce, Bureau of the Census.



## Exhibit B

### Bicycle and Pedestrian Journey to Work in Selected Montana Cities

(Age 16 and Over)

City	Bicycle		Walked	
	Number	Percent <sup>1</sup>	Number	Percent
Missoula	793	3.9	1,638	8.2
Bozeman	453	4.1	1,858	16.9
Great Falls	199	0.8	1,173	4.8
Helena	178	1.5	1,276	10.5
Billings	172	0.4	1,779	4.6
Kalispell	94	1.9	381	7.5
Butte	37	0.3	866	6.4
Total	1,926	1.5	8,971	7.2
Statewide Total	3,209	0.9	27,022	7.7

<sup>1</sup>Percent of total journey-to-work trips in city

Source: U.S. Department of Commerce, Bureau of the Census.

## B. National Trends

Over the past decade there has been an increased national interest in the ownership and use of bicycles.

The national bicycling and walking study conducted by the Federal Highway Administration found that by the end of 1993, there were more than 100 million bicyclists in the United States, which represents an increase of over 33 percent in the last 10 years. More than half of the United States' cyclists are adults. Ownership of bicycles is increasing. In 1993, 13 million bicycles were sold in the United States, the highest level in 10 years. In a recent Harris Poll survey half of America's adult bicyclists said they would commute to work or school at least occasionally if there were safe places to ride. (National Bicycling and Walking Study. Federal Highway Administration, 1991). The same survey showed that nearly 60 percent of all Americans want the government to devote

more funds to making the transportation system more bicycle and pedestrian friendly. Bicycle advocates argue that the potential for shifting trips from driving alone to bicycling or walking is significant. This is because 25 percent of trips are one mile or less, 40 percent are two miles or less, 66 percent are 5 miles or less.

## **C. Changing Policy Environment**

### **1. Federal Policies**

In recent years federal policy has placed increased emphasis on the provision of bicycle and pedestrian facilities as part of the transportation system. In 1990, the U.S. Department of Transportation stated that it is national policy to: "Promote increased use of bicycling, and encourage planners and engineers to accommodate bicycle and pedestrian needs in designing transportation facilities or urban and suburban areas" (National Bicycling and Walking Study. Federal Highway Administration, 1991).

The Intermodal Surface Transportation Efficiency Act (ISTEA) requires that the incorporation of bikeways and pedestrian facilities into highway projects are considered as one of the 23 statewide planning factors. ISTEA requires both the Montana Department of Transportation (MDT) and the state's metropolitan planning organizations to include bicycle and pedestrian elements in their transportation plans.

More recent policy statements by Congress, the U.S. Department of Transportation and the Federal Highway Administration state that "the federal policy goal for bicycling (specifically) is to accommodate current use and to encourage increased use, while enhancing safety."

### **2. State Requirements**

The 1985 Footpath and Bicycle Act (Montana Code Annotated 60-3-301) is the only Montana statute identified that specifically addresses bicycle use and pedestrians. This act sets a minimum annual spending requirement for footpaths and bicycle trails. The MDT has met this requirement by documenting the costs of paved shoulders, sidewalks, and road and bridge improvements that benefit pedestrians and bicyclists.

## **D. Status of Bicycle and Pedestrian Facility Planning and Development in Montana**

The MDT has responded to an increased public interest in bicycles and new federal mandates by implementing a range of bicycle and pedestrian projects and establishing a state-level program. Montana's metropolitan planning organizations, urban areas, and the tribal governments in the state are undertaking planning and project development to address bicycle and pedestrian needs. Current efforts are discussed below.

### **1. State-level Bicycle and Pedestrian Planning**

The status of the major elements of the MDT's bicycle program are summarized below.

- **Bicycle and pedestrian coordinator**

The MDT has established a state bicycle and pedestrian coordinator, as required under ISTEA. The coordinator is responsible for addressing non-motorized transportation considerations. This position is currently a half time position and the responsibility of one person located in the urban planning section. The current coordinator responds to specific requests for assistance, provides technical assistance (in the areas of justification, agreements and design standards) to state and local governmental agencies and other divisions and bureaus within the MDT, and serves on the State Trails Committee. The coordinator also works with the MDT's Engineering Division. The Coordinator is currently involved in developing a process to ensure that pedestrian and bicycle concerns are consistently addressed in the project development process.

Many communities have financed bicycle and pedestrian facilities. This has resulted in many technical assistance requests to the state coordinator. Coordinating the use of Congestion Management and Air Quality Improvement funds allocated to Missoula and used for bicycle and pedestrian improvement is also the state coordinator's responsibility.

- **Consideration in advance planning and design**

Bicycle and pedestrian facilities are considered in the project development and review process. However, this consideration

would benefit from policy direction that would provide guidance to District engineers and design engineers for addressing bicycle and pedestrian facilities consistently.

- **Bicycle and pedestrian facilities are receiving funding**

Montana is currently in the third year of administering the Community Transportation Enhancement Program. This provides the mechanism for allocating \$5.5 million enhancement program. Over one half of the approved enhancement projects submitted by local units of government include facilities for bicycles and pedestrians, despite the requirement for a higher percentage of local matching funds. In Missoula, Congestion Management and Air Quality funds have been used for several bicycle and pedestrian projects. These include improvements to the bridge structure at California Street that provides a critical link for trail accessibility across the river. In addition, a number of current urban area projects have included bicycle and pedestrian improvements.

All three Montana metropolitan planning organizations have or are currently completing non-motorized transportation plans. Bicycles are included in transportation plans for several smaller Montana urban areas including Flathead and Cascade Counties.

The availability of federal policy direction and funds for planning and construction of pedestrian and bicycle facilities enhancement resulted in requests from local government, the public, and special interest groups for inclusion of these facilities on many state road and highway projects. Public interest is impacting all phases of roadway planning and design. The following lists the issues raised by the public concerning bicycle facilities and some of the technical planning issues.

## **2. Tribal Governments and Local Jurisdictions**

- **Tribal governments are planning for non-motorized modes**

A number of the tribal governments are actively involved in planning for bicycle and pedestrian facilities. This is a particular concern on the reservations for both safety and mobility reasons; for many, bicycles and walking offer an affordable means of transportation.



## **II. KEY BICYCLE AND PEDESTRIAN POLICY ISSUES**

### **A. Public Interest in Bicycle and Pedestrian Facilities in Montana**

Public involvement undertaken as part of TranPlan 21 and recent experience during project development steps, such as environmental impact analysis around the state, reveal a strong public interest in the provision of bicycle and pedestrian facilities. Among the key issues are the following:

- The stated need and citizen priorities for bicycle and pedestrian facilities for commuting, transportation, recreation, and the preservation of environmental quality.
- A desire for increasing and improving bicycle and pedestrian facilities and safety, most notably in urban areas.
- The need to recognize the geographic and climatic constraints in Montana and the limited role for bicycle facilities in rural areas.
- The importance of avoiding system discontinuity, distinguishing between urban, rural, and regional differences in Montana.
- Skepticism about the extent of the role bicycles can play as a mobility solution in Montana.

### **B. Planning for Bicycles and Pedestrians in Montana**

The considerable public interest in bicycle and pedestrian facilities, expressed through public involvement processes around the state, raises a number of planning issues. Simply put, these issues concern how to address bicycle needs in a very large sparsely populated rural state that experiences long cold winters. Further, in addressing bicycle needs, it is important to determine the role that bicycles and pedestrian facilities can play as part of Montana's overall multimodal transportation system.

## **1.   Bicycling and Walking as Modal Options in Montana**

Bicycling and walking is undertaken to some degree by almost all Montanans. Bicycling is used as a mode of transportation by a small proportion of Montana's population. However, walking is used by a large number, many people walk to work, to stores, and schools. Viewed from a twenty year planning perspective, bicycling and especially walking can provide alternative means of transportation and have the potential to help to reduce roadway congestion and air pollution.

Efforts to promote bicycle and pedestrian mobility in Montana appear best suited to both Montana's larger and smaller urban areas. Bicycle and pedestrian components of urban area plans can include steps to sustain and increase the use of these modes. In the larger urban areas walking and cycling can support local congestion management plans and contribute to improving the state's air quality.

Bicycle and pedestrian mobility serves mainly recreational purposes in rural areas. Extensive planning and programming appears unnecessary, given the state's vast geographic scope and low rural population densities. Efforts to improve rural facilities would be best suited to localized recreational attractions where they would be more cost-effective.

## **2.   Planning Issues**

- **Need to target resources to where demand is and not overbuild**

The available data indicate large differences in the use of bicycles between different cities in Montana. For example, bicycle use in Missoula and Bozeman is much greater than Billings and Butte (note Exhibit B). Similarly, there are likely to be large regional variations in interest and demand for bicycle facilities. Any approach to targeting bicycle resources should recognize Montana's different urban, rural, and regional demands.

- **Accommodating bicycles and pedestrians on the highway**

Bicycle and pedestrian facilities are most readily accommodated in the roadway right of way. Therefore, their planning, development, and maintenance is most readily incorporated into road planning and design processes. The key planning question is the level of highway development necessary for accommodating bicycles.

- **Designating a bicycle and pedestrian system**

Montana has no officially-designated statewide system of bicycle or pedestrian paths, routes, or trails. Designating a bicycle system is an approach taken in some states to identify preferred facilities for use by bicyclists.

- **Mobility benefits of bicycles and pedestrian facilities**

Bicycling and walking provide travel options for those who are unable or chose not to drive. Depending upon the extent to which bicycling and walking results in a reduction of vehicle miles travelled, or a slower rate of growth, they could contribute to improved environmental quality. In the state's urban areas, increased use of bicycles along with other strategies could help to meet air quality standards, prevent congestion, and help to reduce demands on the highway system. Successful pedestrian and bicycling strategies can provide key elements of a multimodal strategy for ensuring continued high levels of mobility in Montana.

- **Promotion of bicycle and pedestrian use through the provision of facilities**

In many cases local jurisdictions choose to invest in bicycle and pedestrian facilities rather than other modes, not based on the forecast demand for the facilities but based on the goal of providing infrastructure that supports modal alternatives. This approach assumes that by providing enhanced infrastructure there will be facilities in place to promote and encourage the use of bicycles.

- **Bicycle and pedestrian facilities as part of the quality of life**

At the local level, communities are increasingly interested in the development of bicycle paths for recreational purposes. Such bicycle paths are valued more for their contribution to community livability and the overall quality of life than as a mode. Providing safe and convenient pedestrian access is also an important component of many local plans.

- **Avoiding system discontinuity**

Ensuring system continuity is an important element of state and local bicycle and pedestrian planning. This will require coordination between the state, metropolitan planning organizations, and urban areas to avoid system discontinuity. An example of system discontinuity would be a case where a bridge reconstruction on a classified bicycle route does not address bicycle use.

- **Recognizing the differences in bicycle and pedestrian demands**

Planning for bicycle and pedestrian facilities needs to establish a consistent approach to bicycle and pedestrian facilities based upon recreational or commuting function, current and anticipated demand, and urban and rural location.

### **III. POTENTIAL POLICY GOALS AND ACTIONS**

#### **A. POLICY GOAL A: Institutionalize Bicycle and Pedestrian Modes.**

**Action A.1.** Develop the State Bicycle and Pedestrian program with the following elements:

- A coordinator with responsibilities for planning and assisting with implementation. This will include coordination with related state and local government planning efforts.
- A program of training and assistance to staff within the Department to address the needs of non-motorized modes.
- Coordination with related state planning efforts including State Department of Fish Wildlife and Parks, State Lands, and Department of Natural Resources and Conservation.
- Develop a state wide bicycle/pedestrian plan that will implement the related goals and objectives of TranPlan 21.

The coordinator is already undertaking a number of the tasks described above. This action would provide further direction for the development of the bicycle and



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pedestrian program. The extent of technical assistance will depend upon the staffing allocated to the bicycle and pedestrian program. Given the low levels of bicycle use in Montana, the key policy issue is whether additional effort should be made to promote increased use.

MDT currently has a half-time State Bicycle Coordinator in the Urban Planning Section. This action has optional staffing levels. It will now be staffed at the level of one full time employee. Increasing the staffing level will enable the coordinator to: provide additional assistance to local jurisdictions, further promote bicycle use. Increasing the staffing level provides the staff resources to implement other actions described in this policy-paper.

Level of Effort:

Annually: One full time employee

Timing: Initiate in 1995

**Action A.2.** Work with the Department of Commerce to prepare a bicycle related tourist guide.

This action will involve combining the identification of tourism-related bicycle routes with tourism related economic development. Implementation may be undertaken at the regional level and will be most successful if undertaken in conjunction with the Department of Commerce's tourism development program. The potential of joint funding and obtaining private sector funding, or publishing the routes as part of Montana's regional tourist profiles, should be examined. The growing popularity of recreational bicycling offers a good tourism-related economic development opportunity for Montana.

Level of Effort:

Initial year 1: 160 staff hours to solicit and coordinate Department of Commerce participation

The level of the MDT's funding support for the bicycle guide will depend upon the level of funding by other parties.

Annually: Minimal, periodic minor update of tourist guide.

**Action A.3.** Assist local units of government to provide transportation facilities that encourage or consider the use by bicyclists and pedestrians.

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Urban areas have limited staff and technical expertise with which to consider bicycle and pedestrian needs. The MDT currently provides assistance to local jurisdictions that request assistance. This action will result in a more proactive approach and help local jurisdictions to address their bicycle and pedestrian needs more effectively. Implementing this action will be the responsibility of the bicycle coordinator.

### Level of Effort:

By combining community transportation enhancement program and bicycle and pedestrian coordinator responsibilities one full time employee will be available.

Timing: Initiate in 1995

**Action A.4.** Prepare and disseminate public service announcements addressing bicycle and pedestrian safety.

The MDT and the Office of Public Instruction currently provide bicycle and pedestrian safety information. This action provides the opportunity to increase public awareness about bicycle safety. It will also increase awareness that bicycles are used as a mode of transportation in Montana. The action would involve preparing radio and television "spots" as a new Public Information Office activity. The action should be implemented through the safety management system steering committee in cooperation with the Office of Public Instruction.

It is likely that radio and television announcements developed elsewhere could be adapted for use in Montana.

### Level of Effort:

Initial year 1: Radio spots - 200 staff hours to prepare radio spots and work with media

Television spots- 200 staff hours to identify and review applicability of existing materials to Montana. Additional costs will be incurred to tape footage of bicycle and pedestrian safety in Montana.

Annually: Minimal, 80 hours, could be incorporated into ongoing public information activities.

Timing: Verify feasibility in 1995 and initiate

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**Action A.5.** Encourage the safety management system steering committee to use the safety management system to provide information on bicycle and pedestrian safety.

This action will involve reporting information on bicycle and pedestrian safety to aid in the designation of the bicycle network and evaluation of any safety-related bicycle improvements. The safety management system will identify safety-related bicycle and pedestrian needs for consideration in project development, use by local jurisdictions and other agencies.

Level of Effort:

Initial year 1: 80 staff hours to identify and select bicycle and pedestrian safety measures

Annually: Minimal, incorporate into the ongoing safety management system work.

Timing: 1995 identify measures for inclusion  
1996 report safety information from management system

**Action A.6.** Encourage the Safety Management System steering committee to undertake efforts to educate motorists on safely interacting with bicyclists and pedestrians.

This action recognizes the importance of motor vehicle driver education in promoting safety. However, education in this area is not under the MDT's jurisdiction. The MDT could use the results from the safety management system to provide input on bicycle and pedestrian safety to the Department of Justice.

Level of Effort:

Initial year 1: 80 staff hours to identify information that will help the Department of Justice.

Annually: Minimal, incorporate into the activities of the bicycle and pedestrian coordinator.

Provide bicycle and pedestrian safety information annually as an output from the safety management system.

Timing: Initiate in 1996

**POLICY PAPER****B. POLICY GOAL B: Target Bicycle-related and Pedestrian Improvements to Account for Urban, Rural and Regional Differences in Current and Future Use.**

**Action B.1.** Identify the most significant routes designated through metropolitan planning organization and urban area plans and selected rural "touring routes" with the greatest demand or potential demand as the basis for planning and system improvement decisions.

This action involves identifying a network of bicycle routes for public information, planning, and system improvement purposes. This can provide a basis to ensure that any bicycle related improvements will contribute to the development of an overall system and ensure that the level of development for bicycle facilities reflects anticipated future demand.

The MDT and local jurisdictions in Montana are already addressing bicycle improvements at the planning and project development levels. Identifying a network of bicycle routes will provide the basis for providing a consistent approach to prevent system discontinuity and to ensure that the MDT does not "over design" facilities. Given the level of public interest in the provision of bicycle facilities and the active planning underway at the metropolitan planning organization and urban level, identifying bicycle routes will provide the basis for coordinating planning and improvements on the state system with local priorities.

This action avoids having to designate an entire system. It takes as the starting point the premise that the greatest demand for bicycle facilities and the greatest contribution that bicycles can make to mobility in Montana is in the state's urban areas. The action involves identifying the most significant routes in metropolitan and urban areas. These routes are in the process of being identified by local planning efforts. The action will also undertake a process to identify selected rural "touring routes", that could be promoted as part of the tourism related economic development efforts described in Action A.2. They could also be combined with any scenic byway related activities. Designation of routes will involve the jurisdiction with the appropriate authority providing bicycle-related informational and directional markings.

**Level of Effort:**

Initial year 1: 600 staff hours to identify rural touring routes and coordinate with metropolitan planning organization and urban area planning.

Annually: Minimal



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Timing: Initiate in 1995, however completion will depend upon the progress of the metropolitan planning organization and urban area plans.

**Action B.2.** Establish a consistent planning approach and design guidelines for incorporating bicycle and pedestrian facilities into highway improvement projects.

Bicycle needs are considered as part of the current project development process. Many different highway improvements across Montana are now including bicycle facilities. However, their consideration tends to be in the later design stages of a project. Bicycle facilities are often not factored into the preliminary design and cost calculations. Establishing a consistent approach will help avoid system discontinuity by ensuring that the MDT will provide a level of bicycle development that will be used over the next twenty years. This action involves establishing a series of consistent guidelines for approaching bicycle facilities. These guidelines will be tied to any designation or identification of bicycle routes. Further, any guidelines will need to be flexible enough to allow for the wide differences between urban and rural areas in addition to accounting for regional use variations.

**Action B.3.** In incorporated areas, unincorporated communities, and indian reservations consider further bicycle improvements based upon proven use or expected future use.

This action applies to urban and other areas (excluding the metropolitan planning organization and urban areas addressed by planning) by recognizing that in these areas there may be a need for bicycle facilities beyond accommodation on an existing shoulder. The nature of the facilities will depend on local conditions and demand. However objective criteria are need in order to determine how bicycle facilities should be considered. Developing thresholds based on bicycle use and urban-rural distinctions should avoid the over-design of facilities based upon unconstrained local demands for facilities.

The action anticipates distinguishing between different areas, based upon use and expected use, to avoid over-design. If current design standards for shoulder widths are adopted to meet bicycle needs in rural areas there will be no increase in unit costs.

Level of Effort: To be determined

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**Action B.4.** Improve bicycle and pedestrian facilities in Montana through incorporation in existing projects

The Intermodal Surface Transportation Efficiency Act has increased the ease of funding bicycle improvements as part of highway improvements and on an individual project basis. This has resulted in increased local and user interest in funding bicycle improvements. However, accommodating bicycles through changes in design increases the unit costs of individual projects. The scale of the unit costs will depend upon the design established for on-street facilities (bicycle lanes, wide curb lanes and shoulders). This action provides options for establishing explicit policy direction for approaching bicycle funding.

Unless there is a safety problem, bicycle improvements will be implemented only where they are part of existing or planned project improvements. For example, any rural principal arterial that did not have a shoulder would not be improved just to address bicycle needs. The bicycle needs would be addressed at the same time as major reconstruction. This action will be most applicable to National Highway System and Surface Transportation Program funds and would not preclude Community Transportation Enhance Program funds or Congestion Management and Air Quality funded projects.

Level of Effort: No departure from current funding levels

**Action B.5.** Make selected bicycle improvements in urban areas as a congestion management and air quality improvement strategy.

This action recognizes that over the 20 year planning horizon there is some potential for the use of bicycles as part of an overall multimodal strategy for addressing congestion. This is particularly applicable to Billings, Missoula, and Great Falls.

Level of Effort:

Initial year 1: This will depend upon the size of any program. However targeting the use of existing Congestion Management and Air Quality funds to bicycle improvements will provide a good funding mechanism. It should be noted that these can currently only be used in Missoula. However, if Missoula reaches attainment status, Congestion Management and Air Quality funds will revert to the overall Surface Transportation Program.

Annually: Ongoing project funding

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Timing: Initiate in 1996

**Action B.6.** Adopt and implement consistent bicycle friendly maintenance standards.

This action involves reviewing overall design standards for rumble strips, drive approaches, cross walks, signage, drainage and so forth. A major area of interest raised by bicycle users was the question of rumble strips. It is necessary to ensure better understanding of Montana's new rumble strip policy that allows separation between vehicular traffic and bicyclists.

#### IV. POLICY ACTIONS NOT ADOPTED

**Action.** Establish an advisory committee to serve as a liaison between the MDT, other jurisdictions, and bicycle and pedestrian users.

*Reason: If there is an advisory committee for one mode, there would need to be one for each other mode.*

This action will establish an advisory committee to provide input from bicycle users and facility providers to the MDT. Such a committee would provide direct input to bicycle and pedestrian planning. This could benefit the MDT by engaging transportation users in addressing pedestrian and bicycle-related needs. In turn, bicycle-users and pedestrians would increase their understanding of the MDT's role as manager of the overall state transportation system.

**Action.** Establish advisory committee to meet twice a year.

*Reason: If there is an advisory committee for one mode, there would need to be one for each other mode.*

This action will establish an advisory committee that will meet twice a year. The advisory committee could be staffed by the bicycle coordinator. The action suggests limiting meetings to twice a year. Opportunities for reducing the need for face-to-face meetings should be considered. One approach would be to have the committee function as a corresponding committee. This would allow members to review materials and provide any written comments or call in with suggestions. This would increase participation, help to ensure statewide representation, and reduce the number of trips committee members would need to make to Helena.

Level of Effort:

Initial year 1: 200 staff hours to establish advisory committee and fully define its role

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Annually: 200 staff hours to establish advisory committee and fully define its role

Timing: Initiate in 1995

**Action.** Do not officially designate a bicycle system

**Reason:** *A state-wide bicycle system needs to be identified.*

Continue with the current situation of no officially designated routes. This action avoids concern about any liability issues that might arise from designating routes. The MDT would simply note that bicycles may be used on all highways except where prohibited. The disadvantage of this is that it limits the information that the MDT can provide to bicyclists requesting route information. The Department does receive requests for route information and with the growing popularity of cycling this could increase.

**Action.** Inventory routes according to suitable/not suitable for bicycles distinction.

**Reason:** *Other MDT actions better address the issue of route identification*

This action will involve designating routes according to the suitability of current conditions. Suitability will be based upon current conditions such as the presence of shoulders and other factors such as traffic characteristics. Designation based on suitability will limit liability exposure but this should be carefully considered in determining the suitability criteria. Where these criteria are not met, roadways should not be designated as suitable. Determining suitability criteria and evaluating the suitability of every highway in Montana for bicycle use will be an involved activity, given the large number of center line miles on the state system and the very low bicycle ridership in most of Montana's rural areas. Further, even where designated unsuitable, the road can still be used for bicycles.

Level of Effort:

Initial year 1: 320 staff hours to establish designation criteria and review liability issues  
1,000 staff hours to determine suitability

Annually: 160 staff hours to update and disseminate information

Timing: Initiate in 1995

**Action.** Adopt a more detailed classification system for bicycle routes.

**Reason:** *Other MDT actions better address the issue of route identification.*

The American Association of State Highway Transportation Officials has developed a classification system for bicycle facilities that includes: bicycle lanes, bicycle paths,



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bicycle routes, bikeways and shared roadways. This action involves applying some type of classification system for bicycle mobility in Montana. This will involve an extensive effort and involve classifying roads rarely used by bicyclists. To successfully develop and apply a classification system will involve a collaborative process involving other state agencies, local jurisdictions, and transportation users.

**Level of Effort:**

Initial year 1: 400 staff hours to establish classification criteria and review liability issues  
1,000 to 1,600 hours to establish classification

Annually: 160 staff hours to update and disseminate information

**Timing:** Initiate in 1995

**Action.** Establish minimum design standards for addressing rural bicycle transportation needs on the National Highway System in Montana on principal arterials.

**Reason:** *Satisfactorily addressed in existing geometric design standards.*

The level of development plan provides for 40 foot width or greater for principal arterials in Montana. This action acknowledges that these widths provide adequate accommodation for bicyclists on the shoulder or a wide curb lane. Assuming that the users' origins and destinations are similar to a motorists this would provide suitable linkages for rural bicycle travel.

**Action.** Make selected bicycle-related improvements to ensure system continuity.

**Reason:** *Not considered a priority*

This action will provide policy direction to undertake improvements to secure system continuity beyond those that will be undertaken as part of the overall improvement program. In considering this action, care needs to be taken to tightly define any recommendations to avoid creating the circumstances in which high cost improvements that would receive low use such as major bridge improvements could be undertaken solely for the purposes of accommodating bicycles.

**Level of Effort:**

Initial year 1: This will be dependent upon the number and size of the projects funded.  
This action could be constrained depending upon the suballocation of the program to these types of improvements.

Annually: Ongoing program allocation

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**Timing:** Timing 1996 onwards. This will have to follow identifying bicycle routes.

**Action.** Undertake a program of bicycle related improvements to develop the bicycle system including selected off-street paths.

**Reason:** *Not considered a priority*

This action involves Montana undertaking a program of bicycle related improvements to develop a bicycle system. It could include off-street improvements such as bicycle paths or building bicycle lanes in urban areas. The purpose of such investments will be to make infrastructure improvements as part of a strategy to meet future transportation needs through the provision of bicycle facilities.

**Level of Effort:**

Initial year 1: This will depend upon the size of the program of improvements. However a meaningful program will require the relatively large allocations of funds for construction.

Annually: Ongoing program funding

**Timing:** Initiate in 1996

**Action.** Replace existing rumble strips with bicycle-friendly rumble strips starting in "high use" areas.

**Reason:** *Existing new rumblestrip policy addresses this. It needs to be better communicated.*

This is an issue consistently raised by bicycle users. Rumble strips make it difficult for bicyclists to be accommodated on the highway shoulder. The safety benefits for motorists of rumble strips need to be balanced with the concerns of bicyclists. Usually, safety related needs are preeminent. Therefore, establishing any revision to rumble strip practices must address safety management issues.

**Level of Effort:**

Initial year 1: 640 hours to establish and document new rumble strip guidelines.

Annually: Minimal

**Timing:** Initiate in 1995

## V. REFERENCES

U.S. Department of Transportation, Federal Highway Administration, *National Bicycling and Walking Study, Interim Report*, (Washington, D.C., 1991)

U.S. Department of Transportation, Federal Highway Administration, *Selecting Roadway Design Treatments to Accommodate Bicycles*. (Center for Applied Research: Great Falls, Virginia, 1994).

American Association of State Highway and Transportation Officials (AASHTO), *Guide for the Development of Bicycle Facilities*.







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